

SOUTHEASTERN BIOLOGY



QH301
.A78
v. 52
no. 3
Sep 2005

ie 52

September, 2005

Number 3

ONLY CALL FOR PAPERS FOR THE 67th MEETING

ABSTRACT SUBMISSION – SEE PAGE 284



Andrew N. Ash addressed the banquet audience
as Past President of the Association

*The Official Publication of
The Association of Southeastern Biologists*
<http://www.asb.appstate.edu/>

SOUTHEASTERN BIOLOGY

(ISSN 1533-8436)

SOUTHEASTERN BIOLOGY (ISSN 1533-8436) is published quarterly in January, April, September, and December by the Association of Southeastern Biologists, Inc., Carolina Biological Supply Co., 2700 York Road, Burlington, NC 27215. Periodicals postage paid at Burlington, NC, and additional mailing offices. POSTMASTER: please send address changes to the SOUTHEASTERN BIOLOGY business manager, Tim Atkinson, Carolina Biological Supply Co., 2700 York Road, Burlington, NC 27215. ASB members receive the SOUTHEASTERN BIOLOGY as part of their membership dues. For non-members, the cost is \$7.00 per issue.

All contributions, inquiries about missing numbers and other matters should be addressed to the Print Editor. News items should be sent to the News Editor. Send books to be reviewed to the Book Review Editor. Printed by Allen Press, 810 East 10th Street, Lawrence, KS 66044.

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PURPOSE

The purpose of this association shall be to promote the advancement of biology as a science by encouraging research, the imparting of knowledge, the application of knowledge to the solution of biological problems, and the preservation of biological resources. The ASB has representation in Section G Committee of the AAAS. Varying types of membership are available to individuals and institutions. See inside back cover.

TIME AND PLACE OF FUTURE MEETINGS

2006 March 29-31, April 1: Hosted by the University of Tennessee, Knoxville, Tennessee.
2007 April 18-21: Hosted by the University of South Carolina, Columbia, South Carolina.
2008 April 16-19: Hosted by Furman University, Greenville, South Carolina.

THE VIEW FROM HERE

A MESSAGE FROM THE PRESIDENT DWAYNE A. WISE

Greetings from warm and humid Mississippi. I hope every member and friend of ASB is having a rewarding and productive summer, and, since this article will appear in the September issue of *Southeastern Biology*, is now ready to face a new academic year invigorated and ready for new challenges. Speaking of challenges, ASB has plenty. We should, I think, view these as opportunities, not problems. As we all will recognize, ASB is growing and evolving. This inevitably brings new questions. How do we accommodate larger meetings? Will we be able to meet on college campuses? What will ASB need in terms of long-range planning for meetings? What do we, the members, expect of our society? These are just a few of the challenges our organization faces.

As we strive to provide data, then analysis, then possible solutions to these and other questions, we see positive new developments. We have better than ever participation by students at our meetings, and we should do everything within our power to increase and to provide the means for student participation even further. We have a new award in Microbiology and funding for it seems secure. We continue to recognize superior secondary-level biology teaching. We have a commitment from a new affiliate, the Southeastern Microscopy Society, which will meet with us in Gatlinburg. This will bring at least 100 new participants and a dozen new exhibitors. We welcome SEMS to ASB!

Even as we grow and develop, we must not lose sight of our goals, "to promote the advancement of biology as a science by encouraging research, the imparting of knowledge, the application of knowledge to the solution of biological problems, and the preservation of biological resources". I believe the founders of ASB meant the word "biology" to be all inclusive. Therefore, I urge each of you to persuade a colleague who has not attended ASB to come to Gatlinburg on March 29, 2006, and to see us up close and personal. Biology is the study of life: how can we not celebrate the life of ASB and try to have an active role in its well-being? I look forward to seeing you in Gatlinburg. ☞



Dwayne A. Wise (left) receives the gavel from Claudia L. Jolls.

CLOSING REMARKS AND A CHALLENGE

66th Annual ASB Meeting Banquet Friday, 15 April 2005 Florence, Alabama

There often is joy and enthusiasm in relinquishing some duties; however, in this case, there also is nostalgia and perhaps some melancholy in the passing of the gavel. You as a membership truly fulfill the mission of ASB by advancing biology as a science, encouraging research, imparting knowledge, applying this knowledge to the solution of biological problems, and by helping to preserve our natural resources. Thank you for the opportunity to serve both you and an organization of the caliber of ASB.

The story of this gavel begins with former ASB President Perry Holt of Virginia Polytechnic Institute and State University. He wrote about the gavel and its significance for ASB in 1977, an article unearthed by Ken Shull of Appalachian State University, reproduced in the September 2004 issue of Southeastern Biology. Holt carved the gavel, using only a penknife. The head is yellowwood (*Cladastris lutea*) of the bean family and the handle from sassafras (*Sassafras albidum*) of the laurel family. Holt selected these woods because 1) they are distinctly eastern or southeastern trees and 2) they are "rare relict species", the only species of their respective genera in North America. Please allow me to quote Dr. Holt, in part, to reflect on ASB and my privilege in serving you this past year.

"This gavel is intended to be used gently, thus its small size....The hope is that the woods of this gavel, characteristic and almost unique to, and well known in the region of the Association, beautiful in themselves, without the skill of the artificer, with their own provenance, may always remind us of the close relationship of so many of our members with wood and stream and simply rustic background and the good people who call such places home."

The ASB and thus its member, like the gavel, are characteristically southeastern, of "their own provenance", well known in the region, rare in the sense of precious, close in their relationships with "wood and stream", yet also close in their relationships with each other. You are good and gentle people who call such places home, good and gentle people who call ASB home. It has been a pleasure and an honor to serve you.

As a modest contribution to this truly great organization, while I cannot fill the shoes of previous presidents, I can follow in their footsteps. I would like to offer a \$1000 challenge to the members for contribution to the ASB Enrichment Fund. I am confident we can meet this goal and I shall personally delight in matching it.

Appreciatively,

Claudia L. Jolls

ASB President (2004-2005) and Past President (2005-2006)
UNC Board of Governors Distinguished Professor for Teaching

**ASSOCIATION OF SOUTHEASTERN BIOLOGISTS
INTERIM EXECUTIVE COMMITTEE MEETING
SATURDAY, 11 SEPTEMBER 2004
HILTON INN, KNOXVILLE AIRPORT
ALCOA, TENNESSEE**

ATTENDANCE: 23 individuals attended the meeting.

NAME	CAPACITY	EMAIL ADDRESS
Claudia Jolls	President	jollsc@mail.ecu.edu
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John Aliff	Committee Representative	jaliff@gpc.edu
Dennis Haney	Committee Representative	dennis.haney@furman.edu

President Claudia Jolls called the meeting to order at 8:53 A.M.

President's Opening Remarks—Claudia opened the meeting with a moment of silence commemorating the victims of the 9/11 tragedy. This was followed by introductions of those in attendance.

Approval of the April 14th and 17th Executive Committee Meeting Minutes

Motion 1: Bonnie Kelley moved the minutes from the April 14th and 17, 2004 EC meetings be approved. Jerry Ritchie seconded.

Approved.

OFFICERS' REPORTS

President's Report—Claudia Jolls gave a report. She indicated that she had been communicating with committee chairs and members as well as with affiliates. She indicated she had mailed out letters of thanks to all. Claudia mentioned she had been in contact with Charles Faulkner of the Southeastern Society of Parasitologists and that John Aliff will be here today to give a report. Claudia developed ASB letterhead stationery and will distribute it to all those who request it. She mentioned she had been in contact with the Southeastern Section of that Society for Plant Biologists (SSSPB) regarding ASB affiliation. She indicated they will likely affiliate starting in 2006. She will meet with them in March 2005 to further discuss affiliation with ASB. Claudia said Dwayne Wise had been talking with the Southeastern Society of Microscopy about affiliation. She said in her conversations with Hank Bart of the Southeastern Fishes Council and Michael Dorcas of the American Society of Ichthyologists and Herpetologists, Southeastern Division, that she felt all lines of communication were still open about their meeting with ASB at least every year their national meeting is not in the southeastern U.S. Claudia said Ken McLeod had requested a cover letter be drafted to accompany the ASB resolution statement on evolution. Claudia drafted such a letter and passed it around for comments.

Motion 2: Terry moved the letter be accepted. Bonnie seconded.

Some discussion followed and editorial comments suggested.

Approved.

Past President's Report—Andy Ash gave a report. Andy passed around a draft definition of ASB affiliates for discussion. Discussion followed and comments were taken from the floor and some revisions made to the draft. Additional discussion followed on exactly what ASB does for affiliates when arranging the annual meeting. Andy pointed out that he was working on his Past President's address for April 2005.

President Elect's Report—Dwayne Wise could not be present. No report was given.

Vice President's Report—Joe Pollard gave a report. Joe pointed out that we need to elect a vice chair to the Patrons and Exhibitors Committee. He agreed to serve in that capacity.

Motion 3: Andy moved to approve Joe Pollard as Vice Chair of the Patrons and Exhibitors Committee. Bonnie seconded.

Approved.

Secretary's Report—Terry Richardson was present. No report.

Web Editor's Report—Terry Richardson gave a brief report. He mentioned the ASB web page would soon be undergoing a change in appearance. He requested that all EC members and committee chairs look over the website, especially with respect to personal information to see if all the contact information, etc. was correct.

Action Item 1: All EC members and committee chairs should review their personal contact information on the web page and get back with Terry with any needed corrections.

Treasurer's Report—Tim Atkinson gave a report. He said the Merrill-Lynch account was being closed and moved to Burlington, NC, into a Wachovia account. Tim said at present there were no outstanding bills or obligations. Jim Caponetti reminded Tim about the costs pertaining to this interim EC meeting.

Membership Officer's Report—Debbie Atkinson was not present. Tim Atkinson presented a report on her behalf. He said that membership was following the usual pattern of dropping off after the annual meeting primarily due to purging those who have failed to pay their annual dues. He said there were presently about 900 members.

Print Editor's Report—Jim Caponetti presented a report. Jim said he needed a copy of the approved April 14th and 17th EC meeting minutes for the December issue of SEB.

Action Item 2: Terry needs to send Jim approved versions of the minutes.

Jim said all deadlines had been readily met for the September issue and thanked all involved. The resolution on the statement of evolution was published in the September issue as was a statement regarding the upcoming Quillcon II symposium to be held at the 2005 meeting in Florence. Announcements for the two new awards were published; one for the Quatermann-Keever Award from SE-ESA and the other for the SD-BSA. Jim said he was repeating instructions for the submission of oral presentations on disk for the 2005 meeting in all upcoming issues.

Archivist's Report—John Herr gave a brief report. He said that various past presidents were starting to send him materials left from their respective terms for archiving. He received one substantial package of such material from Jim Fralish. Finally, John mentioned the system we have in place is currently evolving and seems to be working exceptionally well.

Book Editor's Report—Debbie Moore gave a brief report indicating that two book reviews had been submitted and published in the September issue of SEB. She encouraged more submissions.

News Editor—Leon Jernigan could not attend. Claudia provided a brief report. She indicated more news needs to be sent in and she encouraged more submissions.

Break—10:30 AM

Reconvene—10:45 AM

AFFILIATE REPORTS

ASIH-SD—No representative was present. Claudia pointed out that ASIH-SD is required by their bylaws to meet with their parent organization whenever the annual meeting is held in the southeast. This year's meeting is in Tampa and 2006 is in New Orleans. She said they will be back with us soon. Scott Jewell and Tim Atkinson mentioned they would be attending the Tampa meeting in an effort to market ASB. Andy suggested that at ASB's annual business meeting, we recognize all affiliates meeting with us and offer our appreciation.

Tri-Beta—Don Roush provided a brief report. He said they are getting chapters to start submitting for the 2005 meeting. He also thanked Jim and ASB for publishing the Tri-Beta students' abstracts in the September issue of SEB. Don said that the UNA chapter would be making t-shirts for sale at the 2005 meeting.

BSA-SS—Zack Murrell was present. He indicated that the new BSA-SS student award announcement was published in the September issue of SEB, but the announcement had not yet been posted on the ASB website.

Action Item 3: Terry will put the announcement on the web page.

ESA-SE—Andy mentioned the Quarterman-Keever poster award new for 2005. A proposal for a symposium entitled "Vegetation Dynamics in Southeastern Ecosystems: from theory to application" was put forth by Joan Walker, Vice-Chair of ESA-SE (she was not in attendance).

Motion 4: Terry moved the proposal be accepted. Andy seconded.

Discussion ensued most dealing with the lack of presenters and titles as well as the symposium title not reflecting that the symposium would engage "capable women" as presenters. Additional discussion included providing or developing a guide and schedule for symposium proposals. It was generally accepted that symposium proposals should include presenters and the titles of their respective presentations and that the LAC Program Subcommittee should receive presenters' abstracts by the abstract submission deadline as with all other presentations. Additionally, it was mentioned that with electronic submissions, the abstracts should come in a single email from the organizer of the symposium with each abstract as an independent attachment.

Motion 5: Zack Murrell moved that Motion 4 be tabled and addressed electronically.

Approved.

Action Item 4: Claudia will contact Joan Walker for more detail and clarification.

SWS—No representative attended. No report.

SFC—Hank Bart could not attend. No report.

SABS—Pat Cox was present. She indicated that SABS currently had around 900 members and was happy as an ASB affiliate.

SSP—Most of the report will be deferred until 1:00 PM when John Aliff will be present. Some general discussion followed. It was mentioned that SSP has about 180 members presenting about 36 papers mostly (about two thirds) by students. Most of the current debate centers on historic issues, but SSP wishes to remain on ASB's meeting schedule for 2006, 2008, and 2010. SSP wants to have their own symposia and wants the registration fee waived for the speakers. This is typically a Wednesday afternoon symposium. Some additional discussion followed. Claudia indicated she would follow up with affiliates regarding submission of symposia proposals. Andy volunteered to put together a handbook for the webpage describing symposium proposal submission guidelines and deadlines. He said he would present this at the Wednesday April 13th EC meeting in Florence.

Action Item 5: Claudia will communicate with affiliates regarding symposium and symposium proposals.

Action Item 6: Andy will put together a handbook of guidelines and deadlines for symposia.

COMMITTEE REPORTS

AAAS—Bonnie Kelley mentioned she was unable to attend this year's AAAS meeting and was unsure about next year's meeting. Jim Caponetti requested electronic reports be sent to him to be included in SEB. He also requested them from AIBS.

AIBS—No report except for Jim's request for electronic versions of reports be sent to him.

ACS—Nancy Coile has retired and will no longer be serving as ACS representative. Claudia pointed out we need to replace Nancy.

Action Item 7: Claudia will follow up on Nancy's replacement.

Local Arrangements 2004, Memphis—Scott Franklin provided a written and oral report. His report contained details of meeting revenues and costs. He noted the meeting profit was \$18,577.76. Additionally, his report contained detailed information on registrant categories, oral and poster presentations, symposia, exhibitors, and social events attendance. Scott also covered hotel accommodations breakdown and comments on PowerPoint usage.

Local Arrangements 2005, Florence—No report was given as details had already been covered at previous EC meetings. Some discussion arose concerning airport shuttle service and having Scott negotiate with airlines to get better prices into Northwest Shoals Regional Airport. Jim pointed out that Terry needed to send him meeting description details by October 28 for the January issue of SEB.

Action Item 8: Jim will send Terry a list of what is needed and Terry will provide this information to Jim.

It was also suggested followed by some discussion that late submissions of PowerPoint talks should be on flash memory sticks.

Break for Lunch—12:08 PM

Reconvene—1:05 PM

Local Arrangements 2006, Gatlinburg—Pat and Randy gave a brief report. The official hotel will be the Glenstone Lodge with overflow at the Gazebo and Holiday Inn. They pointed out a Microtel was across the street also. Rooms for \$46 had been reserved for the meeting. Pat mentioned the Social and wanting to have it at the aquarium in Gatlinburg, but the price was exorbitant. She was hoping to get better field trip attendance at this meeting. Pat pointed out that UNA will likely continue conducting the electronic registration. She said the building for the meetings was currently under construction, but should be complete in time for our meeting. There will be lots of places to dine within walking distance of the meeting venue. They are currently looking into having the Thursday night social at the Smokey Mountain Brewery with barbeque by Calhoun's and beer and wine included.

Local Arrangements 2007, Columbia—John Herr was present to report. John mentioned he and Scott Jewell would soon be attending the grand opening of the convention center that will be the site of the 2007 meeting. He indicated all things were in good order and presented a list of the LAC members and positions and a tentative schedule.

Meritorious Teaching Award—Bonnie Kelley gave a report. She said the announcement for nominations went out and she thanked Tom Wentworth, previous MTA chair, for his suggestions. She said they were expecting some nominations by the January 14th deadline and that they were soliciting nominations as well.

Committee on Women, Minorities and Persons with Disabilities—Bonnie gave a report. She indicated the committee had discussed why only 3-4 minority institutions participate in ASB. The general thoughts were to have a panel discussion on why this was so and how to involve more minority institutions and encourage their participation in ASB. She said the committee was thinking of a 1-1½ hour luncheon with 30-40 maximum attendees. Their hopes are that the discussion will result in the design of some type of outreach program targeting minority institutions. Elaine Davis volunteered to help with the panel.

Motion 6: Terry moved to accept the panel discussion with a \$300.00 budget. Bonnie seconded.

Approved.

Conservation Committee—No report, but some discussion ensued regarding the mission of this committee.

Enrichment Fund Board—No report.

Education Committee—John Aliff gave a report. He said the committee would like to present a symposium on teaching evolution in the face of intelligent design theory. He indicated they would invite specialists in this area to come in and address the topic. He requested \$800.00 to use for honoraria. Currently the speakers included Dr. John Aliff and Dr. Rob Watts. Others have yet to be contacted. He indicated he would like a room for about 50 on Friday morning for a half day. The format was expected to be 30 minute presentations with about 10-15 minutes for questions between talks. Some discussion ensued regarding the incompleteness of the symposium proposal.

Motion 7: Zack Murrell moved to table the discussion on the Education Committee symposium.

Discussion ensued.

The motion to table was withdrawn.

Motion 8: Joe Pollard moved that \$800.00 be allotted to the Education Committee to put together a symposium contingent upon symposium approval. Jim Caponetti seconded.

Some discussion ensued.

The motion and second were withdrawn.

Motion 9: The Education Committee moved that \$800.00 be provided for honoraria for speakers participating in a symposium on teaching evolution in the face of intelligent design theory.

Approved.

Finance Committee—No report.

Graduate Student Support Award Committee—Neil Billington gave a report. He indicated the committee had addressed the way they needed to deal with the needs of graduate students. He said the committee had decided there needed to be a thorough revision of the criteria, guidelines, *etc.*, that deal with the support awards. Neil mentioned that the committee needed more clarification from the EC on exactly what “travel” refers to in the award announcement and committee guidelines. Discussion followed on whether “travel” included registration fees, banquet tickets, literally travel costs only, *etc.* After discussion it was suggested that transportation *per se* be removed from consideration and that only costs common to each graduate like registration, banquet, rooms, *etc.* should be considered. More discussion continued.

Nominating Committee—Ken Shull could not attend. Claudia said she had been in contact with Ken and that all was well and on track with nominations.

Patrons and Exhibitors Committee—Scott Jewell and Joe Pollard were present to report for the committee. They brought to the table the idea about pricing differences for patrons vs. exhibitors and vendors. Some discussion followed. Claudia charged the committee to review the issue again and look into fee structures for patrons, exhibitors, and vendors.

Past President’s Council—No report.

Resolutions Committee—Andy Ash said no resolutions had been received and did not know if any existed that needed to be considered. He asked that any resolutions needed to be sent to him.

Place of Meeting Committee—Joe Pollard gave a report. He presented Claudia a letter from the Dean of Arts and Sciences and President of Furman University inviting ASB to Furman in 2008. Currently the expected dates are either April 2-5th, 9-12th, or 16-19th. This was preapproved at the 2003 interim meeting. Joe mentioned that Wofford College is interested in the 2010 meeting. Claudia said she will contact Marshall University about hosting a meeting. Tim brought up the renewal of Scott Jewell’s contract. Some discussion followed.

Poster Award Committee—Dennis Haney gave a report. He mentioned that all things that needed updating in the various announcements and documents had been updated. He indicated the committee had written some new duties that are now relevant to administering and giving the poster award. The committee updated the guidelines description, criteria, *etc.* for the award in the ASB handbook. This brought up the banquet attendance issue and discussion followed. Andy suggested we should keep the banquet price for students as low as possible regardless.

Publications Committee—Tom Wentworth gave a short report. He mentioned that the committee is not really a “proactive” committee but rather reacts to situations that arise. They had had one inquiry about publishing a symposium from Robert George which brought additional discussion.

Senior Research Award Committee—No report. Claudia mentioned she had been in contact with Ray Williams and that all was well in hand.

Student Research Award—Claudia said she had been in touch with George Cline. She said George requested we should consider having all award applicants present their papers in a single session especially for them. Some discussion ensued and it was generally agreed that this was not a good idea due to highly varied topic matter.

ASB Thompson-Brooks/Cole Award in Microbiology Committee—Claudia indicated the new committee was composed of Don Roush, Ken Shull, and Dwayne Wise.

Break—3:15 PM

Reconvene—3:30 PM

NEW BUSINESS

John Herr and Zack Murrell presented for discussion the idea of the newly forming The Society of Herbarium Curators becoming an ASB affiliate. Discussion followed. Much of the discussion covered the history of the herbarium curators meeting with ASB over the years as an unofficial group. They are now formalizing their group into an organization. Andy suggested that a resolution from the TSHC stating that ASB support herbaria would be in order.

Motion 10: Jerry moved that we tentatively accept The Society of Herbarium Curators as an ASB affiliate. Bonnie seconded.

Some discussion followed.

Terry offered an amendment to the motion to strike the word "tentative." Jim seconded.

The amendment passed.

More discussion followed and the question was called.

The motion as amended was approved.

OLD BUSINESS

There was no report from the ad hoc committee formed to look into electronic voting for ASB elections.

Joe Pollard gave a brief report from the ad hoc committee charged to look into forming two awards based upon attendance at the annual meeting. The committee was to come up with rules for awarding \$1,000.00 to an institution with the most student attendance. The idea was put before the EC by the Past

President's Council. One award was to be for the institution sending the most students and the other was for the institution sending the most non-Tri Beta students. Claudia suggested that maybe the information discussed here, including other use of the money, be returned to the committee for them to continue discussion and report back to the EC in a few months or at the Florence meeting in April. Considerable discussion followed with the general consensus to not present the awards at this time due to numerous complications.

Action Item 9: Claudia will report to the Past President's Council that their idea was examined by the EC and the general consensus was to not present the awards at this time due to numerous complications.

Andy asked a question about developing protocol for the EC doing electronic voting via email on relevant issues needing attention throughout the year. He also wanted to know about where the EC stood with respect to a previous proposal put forth by Ken Shull about doing away with the Friday night banquet.

Action Item 10: Claudia will work on developing the EC voting protocol and Debbie Moore agreed to help.

Motion 11: Andy moved we continue to have a Friday night banquet and a Thursday night social. Zack seconded.

Some discussion followed and the question was called.

The motion passed.

Jim requested a write-up from John Herr and Zack Murrell about the Society of Herbarium Curators for publishing in SEB.

Action Item 11: John and Zack will prepare a write-up on the Society of Herbarium Curators for SEB and submit it to Jim.

Adjournment—4:12 PM

Respectfully Submitted,
Terry D. Richardson, Secretary ✉

NOTICE

Free to any library plus shipping charges!

Castanea: Bound volumes 16 through 67.

ASB Bulletin: Bound volumes 1 through 47, and

Southeastern Biology: Bound volumes 48 through 50.

Contact James Hardin, jwhardin@mindspring.com or phone 919 834-1598.

**ASSOCIATION OF SOUTHEASTERN BIOLOGISTS
EXECUTIVE MEETING
WEDNESDAY, 13 APRIL 2005
FLORENCE, AL**

AIBS Representative Report

The traditional AIBS annual meeting will be replaced by three one-day symposia. "An Open Access to Journal Publishing" will be held on Monday, 9 May in Washington, DC at the end of the regular Council/Board Meeting; a Science Policy Symposium will be held in conjunction with the Association for Politics and the Life Sciences on August 20, 2005; the final symposium will occur in October in conjunction with the National Association of Biology Teachers meeting. While the format of the annual meeting has shifted emphasis, the overall mission of AIBS and its goals remain the same. The annual awards program, recognizing a distinguished scientist, an Outstanding Service Award, the Education Award, the President's Citation Award, and Media Awards will be made during the council meeting.

Among the notable activities of AIBS over the year are:

1. The NEON project update that outlined the complexities of designing ecological forecasting systems in anticipation of the detailed June 2006 report;
2. The expansion of student chapters that fosters the intellectual and professional interests of biology students who serve as ambassadors for the broader biological community;
3. The AIBS/National Council for Science and the Environment (NCSE) Evolution List Server Network for U.S. and Canada that facilitates communication among interested parties;
4. The Diversity Scholars Program that recognizes and promotes the achievement of underrepresented minorities providing a diversity outreach directory and lists of organizations with programs supporting the needs of these students;
5. The Education Committee meets on a monthly basis to provide analysis and communication to the members of the AIBS Board, as well as to address issues of significance to our membership and the biological community;
6. The Membership Committee has also been very active, successfully bringing aboard two new societies. Effective January 2005, the annual dues of all member organizations of AIBS are \$125.00 per year. Individual member dues remain at \$70.00 per year.

Respectfully submitted,

Geraldine W. Twitty
AIBS Representative

AAAS Representative Report

AAAS Affiliates Meeting
Friday, 18 February 2005
Marriot Wardman Park
Washington, DC

Affiliates were welcomed by AAAS President Shirley Jackson.

AAAS CEO Alan Leshner gave introductory remarks on issues surrounding attacks against the teaching of evolution. He said simply protesting does not work, that we need to do a better job of educating the public and we must engage in dialogue with various constituencies. He said AAAS has taken a position about evolution in the classroom since 1972 and will continue to do so. He invited affiliates to work with them.

Connie Bertka, Director of Dialogue on Science, Ethics, and Religion (DOSER), spoke and said AAAS is encouraging organizations that support evolution to come out more strongly. DOSER is developing a resource to provide material to distribute to churches, school boards, teachers and other groups.

The audience engaged in discussion about what is going on in their states and organizations.

Respectfully submitted,

Bonnie Kelley
AAAS Representative



ASB Executive Committee members at the annual meeting in Florence, Alabama. From left to right: Jim Caponetti, Jennifer Davis, Kim Marie Tolson, Scott Jewell, Dwayne Wise, Claudia Jolls, John Herr, Tim Atkinson, Debbie Moore, Tom Wentworth, Scott Franklin, and Dennis Haney. Not shown: Debbie A. Atkinson, Elaine Davis, Terry Richardson, Leon Jernigan, and Jerry Ritchie. 

ASSOCIATION OF SOUTHEASTERN BIOLOGISTS

66th ANNUAL BUSINESS MEETING FRIDAY, 15 APRIL 2005 FOGELMAN EXECUTIVE CENTER FLORENCE, ALABAMA

Call-to-Order—President Claudia Jolls called the 66th Annual Business Meeting of the Association of Southeastern Biologists to order at 11:30 AM with 85 voting members in attendance.

Claudia asked for approval of the minutes of the 65th Annual ASB Business Meeting. Terry requested any editorial corrections be given to him following the meeting.

Motion 1: A motion was made and seconded to approve the minutes.

Motion 1 passed.

Election of Officers—Ken Shull, chair of the Nominations Committee, announced the following slate of officer candidates presented by the Nominations Committee:

President-Elect—Kim Marie Tolson and Jim Hull. Ken asked for nominations from the floor. There were none.

Motion 2: A motion was made and seconded to close nominations.

Motion 2 passed.

Vice President—Tom Wentworth and Mike Dennis. Ken asked for nominations from the floor. There were none.

Motion 3: A motion was made and seconded to close nominations.

Motion 3 passed.

Treasurer—Tim Atkinson. Ken asked for nominations from the floor. There were none.

Motion 4: A motion was made and seconded to accept Tim Atkinson as Treasurer by acclamation.

Motion 4 passed.

Executive Committee Members-at-Large—Jennifer Davis, Dennis Haney, Richard Henson, and Robert George. Ken asked for nominations from the floor. There were none.

Motion 5: A motion was made and seconded to close nominations.

Motion 5 passed.

Voting proceeded and ballots were collected by tellers and removed for tallying.

Election Results: [Note from the Secretary: Results of the election of officers are presented herein as a matter of record. Election results are not announced at the Annual Business Meeting, but rather are held for announcement at the Annual ASB Banquet.]

Kim Marie Tolson, President-Elect

Tom Wentworth, Vice President

Tim Atkinson, Treasurer

Jennifer Davis, Executive Committee Member-at-Large

Dennis Haney, Executive Committee Member-at-Large

Local Arrangements 2005, Florence, AL—Terry gave a brief overview on what was currently known regarding the 2005 Annual Meeting attendance and statistics.

President's Report—Claudia Jolls gave a brief report covering items accomplished during her tenure as President. She focused on establishing and fostering lines of communication with new and current affiliate members and patrons. She mentioned our newest patron member Marilyn Pendley of West Iredell High School, Statesville, NC. Additionally, Claudia pointed out 2-3 potential new affiliates with ASB and she also welcomed 4 new exhibitors. President Jolls acknowledged the long-term support of those contributing to the Enrichment Fund and specifically recognized Steven and Carolyn Dial for their support. She also produced a distributable form of the ASB Resolution on the Teaching of Evolution in the Classroom. Following a precedent set by Jim Fralish and Robert Haynes, Claudia indicated if \$1,000 in contributions are made to the Enrichment Fund before the next annual meeting that she would match it with a \$1,000 contribution of her own.

Secretary's Report—Terry Richardson read the following names as those having applied for emeritus status with ASB: Loran C. Anderson, Sisir K. Dutta, Lafayette Frederick, and E. Douglas Waits.

Motion 6: It was moved and seconded that these members be awarded emeritus status with ASB.

Motion 6 passed.

Terry also announced news received of deceased members over the past year and asked if there were any additions. The following deceased members' names were read: Edward A. Crawford, James. E. Deck, Wilbur Duncan, Robert L. Humphries, Charles S. Shoup, and Eric Fontonelle Thompson. Terry called for a

moment of silence for the deceased members. Terry also asked that anyone having information and/or photographs of the deceased suitable for an obituary to please contact Jim Caponetti, Print Editor.

Treasurer’s Report—Tim Atkinson briefly presented the treasurer’s report and the proposed 2006 budget. He asked for any questions or discussion. There was comment from the floor regarding the verbal and cursory nature of the report.

Print Editor’s Report—Jim Caponetti gave the print editor’s report. Jim mentioned that Allen Press continues to provide excellent service and the U.S. Postal Service is remaining timely with bulk mail delivery of *Southeastern Biology*. He also added that the ASB archives are up-to-date with the bulletin. Jim mentioned that he was currently able to run four patron ads per year. Jim also pointed out several specific items published as requested by the Executive Committee.

Resolutions Committee Report—Chair Andy Ash gave the report. Andy read a resolution of appreciation to the University of North Alabama and the Local Arrangements Committee and Program Subcommittee.

Motion 7: The Resolution of Appreciation was presented for acceptance as a motion from the committee. The motion requires no second.

Motion 7 passed.

Andy read a second resolution that provided for adopting a position statement on modifications to the Endangered Species Act. Andy asked for questions or amendments.

Motion 8: It was moved and seconded that in the fourth statement of the resolution the word “ontogeny” be stricken and replaced with the word “development.” The motion was seconded.

Motion 8 passed.

Old Business—None.

New Business—None.

Adjournment: The 66th Annual Business Meeting of the Association of Southeastern Biologists adjourned at 12:00 noon.

Respectfully Submitted,

Terry D. Richardson
Secretary

**EVENTS OF THE 2005 ANNUAL MEETING IN FLORENCE, ALABAMA
HOSTED BY THE UNIVERSITY OF NORTH ALABAMA**

**ASB MERITORIOUS TEACHING AWARD
UNIVERSITY PROFESSOR HONORED**

**David A. Etnier
(ETS)**

The ASB Meritorious Teaching Award is sponsored by Carolina Biological Supply Company, Burlington, North Carolina. Award committee chair, Bonnie Kelley, and committee member, Patricia Cox, jointly presented the 2005 ASB Meritorious Teaching award to Dr. David A. Etnier, Professor Emeritus of Ecology and Evolutionary Biology, University of Tennessee, Knoxville. He has been working in the field of aquatic biology for more than 30 years. He not only knows fish, but mussels, aquatic insects and even plants and fungi. He has been called **one of the last great naturalists**.

He grew up in Minnesota, where at the tender age of 8, he started his first bird list, making field notes and comments. He also made a scrapbook that he called "the Book of Knowledge" and filled it with clippings from outdoor magazines, calendar photos, sketches and other observations. He received both his B.S. and Ph.D. from the University of Minnesota and then came to the University of Tennessee in 1965 where he began his teaching career. Even though he is in "semi-retirement", he is still teaching and no doubt will educate many more students about aquatic concerns, and birds, small mammals, and whatever else he has stored away in a lifetime of being a biologist, naturalist, and teacher.

His legacy is unprecedented, with more than 65 graduate students and hundreds of undergraduates who all agree that he is one of the BEST instructors that they ever had. He was more than a teacher, but became a mentor and friend to most he encountered. He is directly responsible for many of the aquatic conservation efforts presently taking place in the Southeastern US, as many of his former graduate students have expanded on his work. Their careers have grown in this direction as a result of his courses and mentoring. For example, his former students hold important positions in the US fish and wildlife service, the USGS, the EPA, ORNL, NOAA, Office of surface mining, national marine fisheries service, and TVA. In addition, many other students have continued in academics and museum curation, and they continue to produce students with the same tenacity that their mentor did before them. All of his graduate students feel like they are part of his family, and most still interact with each other; this is a quote from a letter received from a former Ph.D. student: *When considering the contributions to his graduates, one should not overlook the strength of the bond that holds his students together as a cohesive unit. We share something that many graduate students don't have. WE are close to one another and network extensively and frequently, keeping in contact with one another as the years go by. I believe the "family" metaphor may be over used but I sincerely consider every one of his former students as family.*

One of his greatest assets as a teacher was how smoothly he made the transition from professor to friend. He involved his students in sports (intramural softball teams or aquatic lab tennis matches), nature recreation like duck hunting, fishing or bird watching, and welcomed them into his family, and *His dead animal parties are infamous.*

Some quotes: Looking back, it is obvious that he instilled in his students the ability to "think outside the box" encouraging individualistic approaches and self-reliance with just the right amount of guidance to produce confident, successful graduates that are competent in their fields of expertise. Moreover, he has remained a reliable resource both as a "font" of ichthyological knowledge, and a constructively critical collaborator and colleague.

His inexhaustible enthusiasm for aquatic biology was highly contagious.


He holds everyone in the same high regard; he is as comfortable and competent at discussing complex taxonomic problems with his colleagues as he is teaching a 3rd grade class about aquatic "bugs". He is always willing to learn from those same people, 3rd graders included. He never answers a question in a way that indicates that he has just heard a "stupid" question. If the question is asked, no matter how simple or complex, he will take the time to answer. He spent endless hours in the lab working with his students, he could have easily passed that on to one of his many graduate assistants, but NO, he was always available either in the teaching lab, or next door in his own lab.

In 1998, he was awarded the UT Alumni Association of Outstanding Teacher Award. He has authored or co-authored over 65 publications including *The Fishes of Tennessee* and has formally described and named 22 new animal species and has had 9 animals named in his honor by colleagues. He is probably best known for his involvement with one of the most controversial conservation issues of the 20th century. He and his class in 1973 found a small undescribed fish living in the Little Tennessee River, scheduled for impoundment by Tellico Dam. The snail darter versus Tellico Dam was the first real test of the endangered species act and almost stopped the construction of Tellico dam. The snail darter became a national icon for conservation efforts and the "poster fish" for the newly formed Endangered Species Act. The original habitat of the snail darter was wiped out--but not before TVA biologists were able to transplant viable populations to the nearby Holston and Hiwassee rivers.

In 1980, he was seining in South Chickamauga Creek in downtown Chattanooga when a familiar looking fish caught his eye. "Well, I'll be a son of a bitch," he said. A second native population of the snail darter was found. Eventually, other populations were discovered, and the fish was downlisted from endangered to threatened.

It is apparent that Dr. Etnier has touched the lives of many biologists throughout the southeast as well as throughout the country. His legacy lives on in his former graduate students and all who believed him to be the Best teacher they ever had!!




David A. Etnier (center) receives the 2005 ASB Meritorious Teaching Award from committee member Patricia Cox (left) and committee chair Bonnie Kelley (right). 

ASB ENRICHMENT FUND AWARD HIGH SCHOOL TEACHER HONORED

Mandy Tinsley

The ASB Enrichment Fund recognized the 2004 Outstanding Biology Teacher from Alabama at the 66th Annual Meeting of the Association of Southeastern Biologists when it convened in Florence, Alabama, April 13-16, 2005. The recipient of the \$500 honorarium and certificate was Mrs. Mandy Tinsley from Etowah High School in Attalla, Alabama. Mrs. Tinsley was present at the ASB meeting on Thursday and Friday to attend workshops and professional presentations. We acknowledged her accomplishments on Friday at the Business Meeting and at the Awards Banquet.



Mandy Tinsley (center) receives the ASB Enrichment Fund Award from award committee chair Kim Marie Tolson and treasurer Timothy Atkinson. 

2005 RESEARCH AWARD RECIPIENTS


ASB SENIOR RESEARCH AWARD

The ASB Senior Research Award sponsored by Associated Microscopes, Inc., Elon College and Haw River, North Carolina, was presented by award committee chair Ray S. Williams to **Nitya P. Jacob** of the Department of Biology, Oxford College of Emory University, Oxford, Georgia, for her manuscript entitled "Comparative analysis of anionic peroxidase gene expression in *Nicotiana tomentosiformis* and the allotetraploid *Nicotiana tabacum*." Her paper presentation at the annual meeting with co-author **L. Mark Lagrimini** is entitled the same as above, *SE Biology Abstract* 16, 52(2).

Award committee chair, Ray S. Williams, submitted the following autobiography of Nitya P. Jacob.

I am an Assistant Professor in the Biology Department at Oxford College of Emory University. I received my B.A. in Biology with Honor from Agnes Scott College in 1995 and my Ph.D. in Horticulture and Crop Science from The Ohio State University in 2000. My dissertation work was conducted in the field of Plant Molecular Biology. From 2000-02 I held the position of Postdoctoral Fellow and Visiting Assistant Professor of Biology at Knox College in Galesburg, Illinois. I have been teaching at Oxford College since Fall 2002. At Oxford College, I teach courses in Introductory Biology, Genetics, and Human Anatomy and Physiology. In 2004, I received an award for exemplary teaching at a Methodist-related institution of higher education from the General Board of Higher Education and Ministry of the United Methodist Church. My research investigates the structure, inheritance, evolution and expression of tobacco peroxidase genes. I have also been involved in developing effective teaching and learning resources to support the engagement of first and second year undergraduate students in research.



Nitya P. Jacob (left) receives the ASB Senior Research Award from award committee chair Ray S. Williams. 

ASB STUDENT RESEARCH AWARD

The ASB Student Research Award sponsored by the Martin Microscope Company, Easley, South Carolina, was presented by award committee chair George R. Cline to **Krista M. Noel** of the Department of Biology, University of Southern Mississippi, Hattiesburg, Mississippi, for her paper co-authored with **Carl Qualls** entitled "Intrinsic versus extrinsic causes of low hatching success of gopher tortoise (*Gopherus polyphemus*) eggs in south Mississippi," *SE Biology* Abstract 127, 52(2). ☞

BROOKS/COLE STUDENT RESEARCH AWARD IN AQUATIC BIOLOGY

The Brooks/Cole Student Research Award in Aquatic Biology sponsored by the Thomson Learning Brooks/Cole Publishing Company, Belmont, California, was presented by award committee chair George R. Cline to **Christopher T. Winne**, University of Georgia's Savannah River Ecology Laboratory, Aiken, South Carolina, for his paper co-authored with **J. Whitfield Gibbons** entitled "Adaptations of a small aquatic snake (*Seminatrix pygaea*) to a dynamic habitat: selection on body size and reproduction after aestivating during drought," *SE Biology* Abstract 40, 52(2).



Christopher T. Winne (center) receives the Brooks/Cole Student Research Award in Aquatic Biology from award committee chair George R. Cline (left) and executive sales representative Tom Ash of the Thomson Learning Brooks/Cole Publishing Company.

☞

ASB RESEARCH AWARD IN MICROBIOLOGY

The ASB Research Award in Microbiology sponsored by the Thomson Learning Brooks/Cole Publishing Company, Belmont, California, is given for an especially meritorious oral presentation of research results in the broad area of Microbiology. Award committee chair Kenneth Shull reported that no award was made this year. ☞

ASB STUDENT POSTER AWARD

The ASB Student Poster Award sponsored by ASB was presented by award committee chair Dennis C. Haney to **Melinda D. Roberts**, Department of Biology, Appalachian State University, Boone, North Carolina, for her poster co-authored with **Howard S. Neufeld**, **Alan W. Davison** of the University of Newcastle-Upon-Tyne, and **Arthur H. Chappelka** of Auburn University and entitled "The influence of water relations on the response of cutleaf coneflower to ozone," *SE Biology* Abstract P79, 52(2).



Melinda D. Roberts (right) receives the ASB Student Poster Award from award committee chair Dennis C. Haney (left).

Award Committee chair Dennis C. Haney also announced that the committee singled out the following two posters for honorable mention:

1. **Brandon Whitney**, **Alexa McKerrow**, and **Thomas Wentworth**. North Carolina State University and Southeast Gap Analysis Project. "Mapping the cedar glades of the Tennessee Central Basin," *SE Biology* Abstract P68, 52(2).
2. **Charlene Warner** and **Min-Ken Liao**. Furman University. "A quick measurement of genetic diversity within and between bunched arrowhead (*Sagittaria fasciculata*) populations using ISSR," *SE Biology* Abstract P13, 52(2).

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THE NORTH CAROLINA BOTANICAL GARDEN AWARD

The North Carolina Botanical Garden Award sponsored by the NCBG was presented by award committee chair Johnny Randall to **Sarah E. Johnson**, Department of Biology, East Carolina University, Greenville, North Carolina, for her paper co-authored with **Claudia L. Jolls** entitled "The effects of competition on the threatened dune annual, *Amaranthus pumilus* Raf. (Amaranthaceae)," *SE Biology* Abstract 134, 52(2).



Sarah E. Johnson (right) receives the North Carolina Botanical Garden Award from award committee chair Johnny Randall.

OR

EUGENE P. ODUM AWARD

The Eugene P. Odum Award sponsored by the Southeastern Chapter of the Ecological Society of America was presented by award committee chair Jake F. Weltzin at the Friday ESA luncheon to **Krista M. Noel** of the Department of Biology, University of Southern Mississippi, Hattiesburg, Mississippi, for her paper co-authored with **Carl Qualls** entitled "Intrinsic versus extrinsic causes of low hatching success of gopher tortoise (*Gopherus polyphemus*) eggs in south Mississippi," *SE Biology* Abstract 127, 52(2), and to **Sarah E. Johnson** of the Department of Biology, East Carolina University, Greenville, North Carolina, for her paper co-authored with **Clauda L. Jolls** entitled "The effects of competition on the threatened dune annual, *Amaranthus pumilus* Raf. (Amaranthaceae)," *SE Biology* Abstract 134, 52(2).




Sarah E. Johnson (left) with mentor professor Claudia L. Jolls.



ELSIE QUARTERMAN-CATHERINE KEEVER AWARD

The Elsie Quarterman-Catherine Keever Award sponsored by the Southeastern Chapter of the Ecological Society of America was presented by award committee chair Howard S. Neufeld at the Friday ESA luncheon to **Melinda D. Roberts**, Department of Biology, Appalachian State University, Boone, North Carolina, for her poster co-authored with **Howard S. Neufeld**, **Alan W. Davison** of the University of Newcastle-Upon-Tyne, and **Arthur H. Chappelka** of Auburn University and is entitled "The influence of water relations on the response of cutleaf coneflower to ozone," *SE Biology Abstract* P79, 52(2), and to **Joy M. Hester** of the Department of Biology, Davidson College, Davidson, North Carolina, for her poster co-authored with **Steven J. Price**, and **Michael E. Dorcas** and is entitled "Effects of relocation on movements and home ranges of eastern box turtles (*Terrapene carolina*)," *SE Biology Abstract* P33, 52(2).



Melinda D. Roberts (left) and Joy M. Hester (right) receive the Elsie Quarterman-Katherine Keever Award from award committee chair Howard S. Neufeld (center). 

SOCIETY OF WETLAND SCIENTISTS SOUTH ATLANTIC CHAPTER STUDENT TRAVEL AWARD

Award committee chair Mary Davis reported that the South Atlantic Chapter of the Society of Wetland Scientists (SWS) is pleased to announce the award of student travel awards for the annual ASB meeting to three students: **John Willson** of Davidson College, and **Chris Winne** and **Gabrielle Graeter** of the University of Georgia (UGA). All three students are doing research at the UGS Savannah River Ecology Laboratory in Aiken, South Carolina. To be eligible, students had to be members of SWS and make a presentation at the annual ASB meeting. Each student received a check of \$165 from Dr. James Luken at a lunch on Thursday.

1. **John D. Willson**, Department of Biology, Davidson College, Davidson, North Carolina, for his paper co-authored with **Christopher T. Winne**, **Michael E. Dorcas**, and **J. Whitfield Gibbons**, Davidson College and Savannah River Ecology Laboratory, Aiken, South Carolina, and is entitled "Post-drought responses of semi-aquatic snakes inhabiting an isolated wetland: Insights on different strategies for persisting in a dynamic habitat," *SE Biology* Abstract 39, 52(2).

2. **Christopher T. Winne**, University of Georgia's Savannah River Ecology Laboratory, Aiken, South Carolina, for his paper co-authored with **J. Whitfield Gibbons**, and is entitled "Adaptations of a small aquatic snake (*Seminatrix pygaea*) to a dynamic habitat: selection on body size and reproduction after aestivating during drought," *SE Biology Abstract* 40, 52(2).

3. **Gabrielle J. Graeter**, University of Georgia's Savannah River Ecology Laboratory, Aiken, South Carolina, for her paper entitled "Habitat selection and movement patterns of southern leopard frogs (*Rana sphenoccephala*) in response to altered forest habitats," *SE Biology Abstract* 86, 52(2).



Society of Wetland Scientists South Atlantic Chapter Student Travel Award recipients (from left to right) John D. Willson, Gabrielle J. Graeter, and Christopher T. Winne with award committee member James O. Luken.



SOUTHERN APPALACHIAN BOTANICAL SOCIETY AWARDS

Michael E. Held, President of SABS, presented awards in three categories at the SABS Friday morning breakfast meeting, and announced the names of the awardees at the ASB Friday night banquet.

Earl Core Student Award

Dr. Earl Core was a major force in the founding of the Southern Appalachian Botanical Club in 1936. The annual Core Student Award was established by the Society to provide financial assistance in support of student research projects in plant taxonomy, systematics, and ecology. The application deadline is February 1st each year. Three awards were presented this year of \$300.00 each.

1. **Mahannad Al-Saghir** (Virginia Polytechnic Institute and State University, Blacksburg)—Systematics of *Pistacia*. Advisor: **Duncan Porter**.


2. **Dwayne Estes** (University of Tennessee, Knoxville)—Systematics of two species of *Gratiola*. Advisor: **Randall Small**.

3. **William Flatley** (Virginia Polytechnic Institute and State University, Blacksburg)—Link between land use patterns and soil erosion rates in Giles County, Virginia. Advisor: **Carolyn Copenheaver**.

Elizabeth Ann Bartholomew Award

The Society annually presents this Award in memory of Elizabeth Ann Bartholomew's untiring service to the public, to plant systematics, and to this organization. This award is presented to individuals who have also distinguished themselves in professional and public service that advances our knowledge and appreciation of the world of plants and their scientific, cultural, and aesthetic values, and/or exceptional service to the society. The 2005 award goes to **Gary Dillard**, Distinguished Professor Emeritus of Biology, Department of Biology, Western Kentucky University, Bowling Green, Kentucky.



Gary Dillard (center) receives the plaque as recipient of the Elizabeth Ann Bartholomew Award from SABS President Michael E. Held (left) and award committee chair Zack E. Murrell (right). 

Richard and Minnie Windler Award

The Richard and Minnie Windler Award was established in 1990 at the annual meeting of the SABS by Dr. Donald R. Windler of Towson University as a memorial to his parents. The award is presented annually to the author or authors of the best systematic botany paper published in *Castanea* during the previous year. The eligible papers may fall into the broad area of plant systematics, including floristic, experimental, revisionary, and nomenclatural studies.

The recipients of the award this year are:

Lawrence S. Barden and **James F. Matthews** for their paper "Andre Michaux's Sumac—*Rhus michauxii* Sargent: Why did Sargent rename it and where did Michaux find it?" published in *Castanea* 69(2): 109-115 (2004).

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BOTANICAL SOCIETY OF AMERICA SOUTHEASTERN SECTION STUDENT AWARD

The Botanical Society of America Southeastern Section Student Award sponsored by the SE Section of the BSA was presented by Joe E. Winstead in the absence of committee chair Lytton John Musselman to **Sarah E. Johnson**, Department of Biology, East Carolina University, Greenville, North Carolina, for her paper co-authored with **Claudia L. Jolls** entitled "The effects of competition on the threatened dune annual *Amaranthus pumilus* Raf. (Amaranthaceae)," *SE Biology Abstract* 134, 52(2).



Sarah E. Johnson (right) receives the Botanical Society of America Southeastern Section Student Award from Joe E. Winstead (left).

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**BETA BETA BETA BIOLOGICAL SOCIETY SOUTHEASTERN REGION
OUTSTANDING PAPER AND POSTER AWARDS**

**District I Paper Session
Frank G. Brooks Paper Award Winners**

First Place Winner—Rachael E. Morgan, Sigma Gamma, Erskine College. "Purification and interactions of multiprotein complexes containing proteins with known CK2 motifs."

Second Place Winner—Kristi Herzer, Sigma Phi, Guilford College. "The role of the *Pseudomonas aeruginosa* aer protein in aerotaxis."

Third Place Winner—Jennifer L. Pickler, Tau Eta, Catawba College. "Effects of food availability on heat-shock protein levels in Carolina chickadees, *Poecile carolinensis*."

**District II Paper Session
Frank G. Brooks Paper Award Winners**

First Place Winner—Michelle L. Johnson, Mu Chi, Midway College. "Evaluating handedness in thoroughbred weanlings."

Second Place Winner—Brett N. Harris, Mu Omicron, Columbus State University. "A follow-up survey of relocated adult gopher tortoises (*Gopherus polyphemus*) comparing two methods of trapping and diurnal activity at disposal area 36, George W. Andrews Lock and Dam in Early County, Georgia."

Honorable Mention—Megan Daigle, Eta Lambda, Loyola University. "Chagas Disease in a Louisiana primate colony."

Honorable Mention—Jennifer L. Fuller, Mu Omicron, Columbus State University. "Ecological assessment of Lindsey Creek: determining overall stream health using macroinvertebrates as biological indicators."

**District I & II Paper Session
Frank G. Brooks Paper Award Winners**

First Place Winner—Courtney B. Gibson, Mu Omicron, Columbus State University. "Effect of varied administration of amfonelic acid, a ritalin-like stimulant on growth rate and activity."

Second Place Winner—Brady C. Denger, Sigma Psi, Florida Institute of Technology. "Comparison of the circatidal activity rhythms of adult fiddler crabs *Uca pugilator* from different tidal regimes."

Third Place Winner—Ashley Wilhelm, Tau Eta, Catawba College. "Social dominance and heat shock proteins: are they related?"

Honorable Mention—Dawn Gerhardt, Sigma Psi, Florida Institute of Technology. “Neural correlates of strike behavior in pit vipers: relative importance of vision and infrared imaging.”

District I Poster Session
John C. Johnson Poster Award Winners

First Place Winner—Vanessa Moreau, Sigma Psi, Florida Institute of Technology. Evaluation of catecholamine-induced changes by adrenochrome and adrenolutin in gap junctions of vascular cells.”

Second Place Winner—Rebekah F. Jordan, Beta Alpha, Salem College. “Role of mTOR in the phosphorylation of normal stromal uterine cells when dosed with insulin.”

Third Place Winner—Lauren Lippincott, Sigma Phi, Guilford College. “Molecular phylogenetic analysis of *Azomonas agilis*.”

Honorable Mention—Ben Carter and Marydee Vaile, Beta Eta, Florida Southern College. “Determination of the effectiveness of storm water treatment wetlands as natural filtering habitats.”

District II Poster Session
John C. Johnson Poster Award Winners

First Place Winner—Yoon Cho, Mu Epsilon, Troy University. “Northern analysis of transcription from a transcription termination reporter construct.”

Second Place Winner—Mary E. Danner, Mu Omicron, Columbus State University. “Evaluation of the effects of estradiol and progesterone on the proliferation of premenopausal and postmenopausal breast cancer epithelium.”



**SOUTHEASTERN DIVISION, AMERICAN SOCIETY OF
ICHTHYOLOGISTS AND HERPETOLOGISTS
AND
SOUTHEASTERN FISHES COUNCIL**

These two ASB affiliates met with the ASIH in Tampa this year and presented their respective awards at that meeting.

THE PEMBROKE GROUP AT FLORENCE, ALABAMA

Pictured are faculty and undergraduate students of the Department of Biology, University of North Carolina, Pembroke, who attended the 66th Annual Meeting of the Association of Southeastern Biologists in Florence, Alabama. Photograph taken on Friday, April 15, 2005.



Standing from left to right: Chrisha Dolan (former undergraduate student; now a graduate student at Appalachian State University), Leon Jernigan (faculty), Adria Pontious (student), Andrew Ash (faculty), Bonnie Kelley (faculty), Jessica Ciokan (student), Sarah Brown (student), and Bruce Ezell (faculty).

Kneeling from left to right: Lisa Kelly (faculty), Patricia Sellers (faculty), Courtney Kilgore (student), and Debby Hanmer (faculty).

RESOLUTION OF APPRECIATION TO THE UNIVERSITY OF NORTH ALABAMA

Whereas the University of North Alabama did agree to make all local arrangements for the Association of Southeastern Biologists to hold its annual meeting on April 13 through April 16, 2005 in Florence, Alabama and

Whereas Local Arrangements Chair Dr. Terry Richardson of the University of North Alabama and Program Chairs Drs. Neil Billington, Stephen Landers, and Michael Woods from Troy University did an admirable job of orchestrating the events and organizing the paper and poster sessions, and

Whereas Mrs. Mary Ann Allan and Ms. Evelyn Bruce organized posters and audiovisuals, Dr. Terry Richardson and Mr. Scott Jewel coordinated commercial exhibits and corporate sponsorships, Dr. Paul Kittle planned field trips, Drs. Amy Crews-Oyen and Donald Roush handled registration and meeting statistics, Dr. Terry Richardson made social arrangements and with Dr. Donald Roush coordinated Beta Beta Beta, Drs. Neil Billington, Stephen Landers, and Michael Woods from Troy University coordinated symposia and workshops, Drs. Terry Richardson and Donald Roush arranged transportation, Dr. Thomas Haggerty managed the web page, and Dr. Donald Roush coordinated volunteers, and

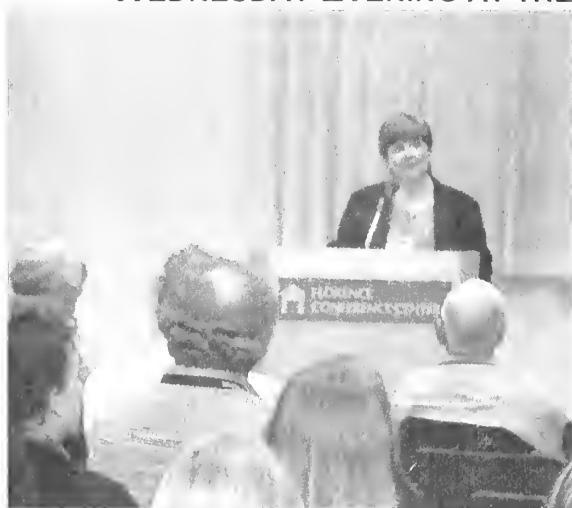
Whereas the Citizenry of Florence, Alabama and the administrators at the University of North Alabama cooperated to welcome ASB to the city of Florence Alabama, and

Whereas the students of the University of North Alabama and Beta Zeta Chapter of Beta Beta Beta volunteered to assist with local arrangements,

Therefore, let it hereby be resolved that the members and officers of the Association of Southeastern Biologists give their sincere thanks and appreciation to all involved in making this the excellent and memorable ASB meeting that resulted from the cumulative efforts of these individuals and organizations.

April 15, 2005

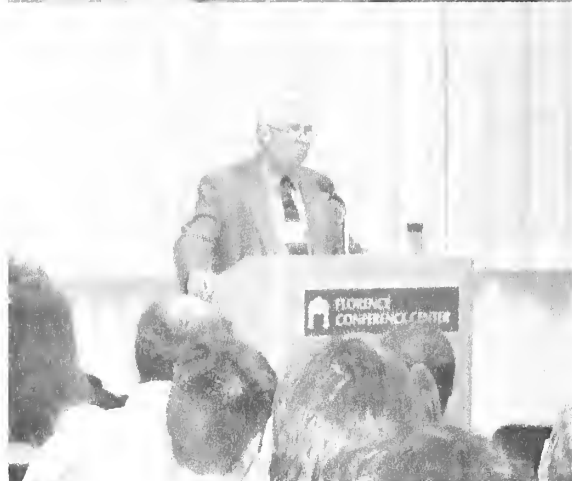
WEDNESDAY EVENING AT THE PLENARY SESSION



President Claudia Jolls welcomes the audience.

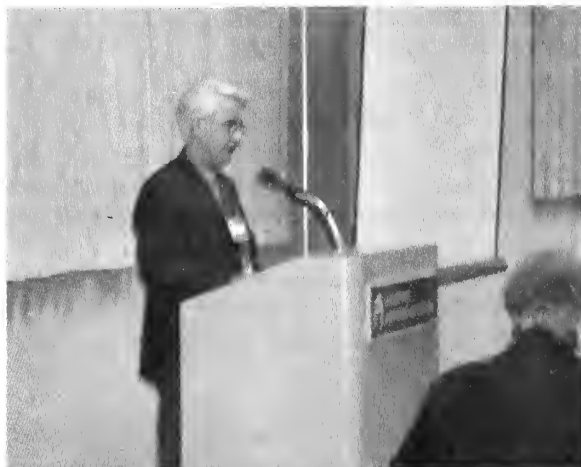


Chair of Local Arrangements Terry Richardson introduces Dr. William Cale, President of the University of North Alabama.

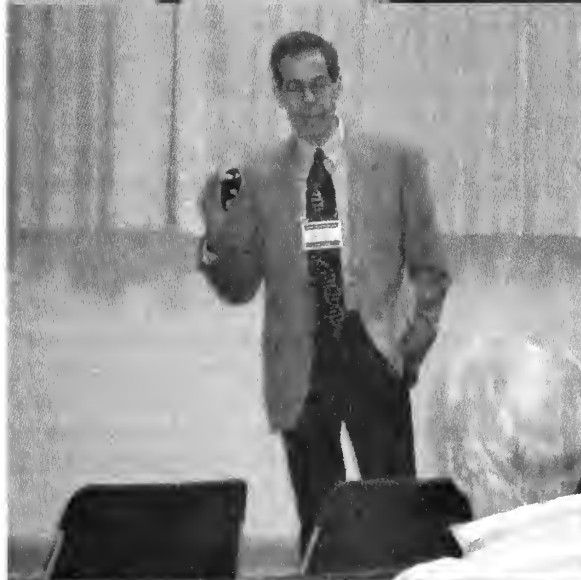


Dr. William Cale welcomes the audience to the University of North Alabama campus.

WEDNESDAY EVENING AT THE PLENARY SESSION



President-elect Dwayne Wise introduced the Plenary Speaker.



Plenary Speaker Massimo Pigliucci, SUNY at Stony Brook, addresses the audience (left).



The Plenary Session audience (below).

Position Statement of the Association of Southeastern Biologists Concerning Potential Legislative Changes to The Endangered Species Act (1973)

Conservation Committee—ASB (Revised April 9, 2005)

The Association of Southeastern Biologists (ASB) is a regional, professional society of biologists. The purpose of this Association is to promote the advancement of Biology as a science by encouraging research, the imparting of knowledge, the application of knowledge to the solution of biological problems and the preservation of biological resources. This statement expresses the recommendations of the Association Concerning proposed legislative changes to the Endangered Species Act (1973).

Congress will be considering modifications to the Endangered Species Act (1973) during its 109th session in 2005, and there are specific portions of the Act that are targeted for revision. The house Resources Committee passed two bills during the House's 108th session in 2004 that would alter Section 4 of the Act. One of these bills, the Critical Habitat Reform Act of 2004 (H.R. 2933, Rep. Dennis Cardoza, CA), was introduced into the House as H.R. 1299 during March 2005. This bill, now called Critical Habitat Enhancement Act of 2005, alters the timing of when critical habitat is designated. It also redefines "critical habitat" for a listed species both in the land and aquatic environment in lakes and within EEZ of the ocean surrounding the coast.

When Congress passed The Endangered Species Act (1973), it was to "*provide a means whereby the ecosystems upon which endangered and threatened species depend may be conserved, and to provide a program for the conservation of these species.*" Congress clearly recognized the role of habitat in conserving endangered and threatened species, and indeed, habitat loss or deterioration is the principal stress to most of these species. Habitat conservation is often the most effective means of protection and recovery for listed species.

The Endangered Species Act (ESA) charges the Secretary of the Interior and the Secretary of Commerce (as in coral reefs, shallow and deep-sea) to designate critical habitats at the same time a species is officially listed as endangered or threatened. H.R. 1299 can delay the designation of critical habitat up to 3 years after the date of listing, or "*...one year after the final approval of a recovery plan for the species....*" For moderately endangered or threatened species, such a delay in designating critical habitats could allow more time for studies to be completed to ensure a more accurate habitat assessment. However, species facing serious habitat loss or degradation might become extinct if the designation of critical habitat were postponed until recovery plans were developed and approved. A number of listed species have low population sizes and are close to extinction. Suitable habitat is often in short supply for these species, and while the ultimate goal of the Act is species recovery, in the short term the Act seeks to maintain their numbers. For highly endangered species, where recovery seems unlikely, the U.S. Fish and Wildlife Service or the National Marine Fisheries Service may never formulate recovery plans. **We recommend that the**

Endangered Species Act retain the provision to designate critical habitats and Marine Protected Areas (MPAs) at the time listing for those species that are determined to be unable to benefit from a recovery plan.

The Endangered Species Act (1973) defines critical habitat as “*specific areas within the geographical area occupied by the species at the time it is listed...*” as well as “*specific areas outside the geographical area occupied by the species at the time it is listed...such areas are essential for the conservation of the species.*” Unoccupied areas often represent degraded habitats in the former range of a listed species.

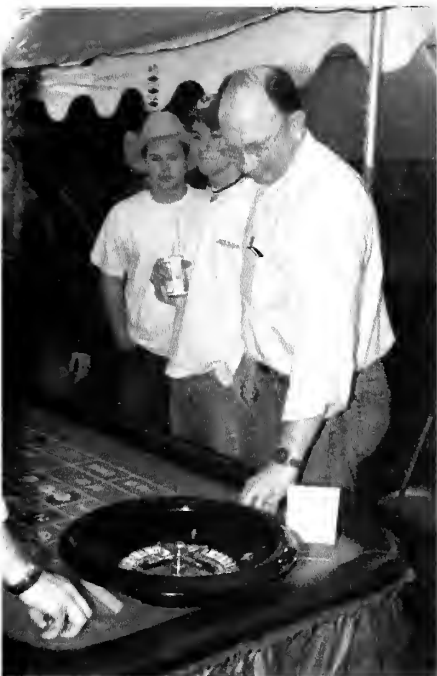
H.R. 1299 redefines critical habitat as the “*...specific area currently used by the species for its essential behavioral patterns, including breeding, feeding, and sheltering....*” It is vital for the Secretary to be able to designate critical habitat in unoccupied areas and that these areas remain available if endangered or threatened species are to experience recovery. This unnecessary redefinition of critical habitat does nothing to protect and reclaim habitat in the former range of a listed species, and may effectively prevent a species from re-establishing new populations in these areas. **We recommend that Congress not change the definition of critical habitat from the original language used in the Act.**

Another bill introduced and passed by the House Resources Committee was the Endangered Species Data Quality Act of 2004 (H.R. 1662, Rep. Greg Walden, OR). H.R. 1662 seeks to amend the Endangered Species Act (1973) “*to require the Secretary of the Interior to give greater weight to scientific or commercial data that is empirical, or has been field tested or peer-reviewed, and for other purposes.*” In addition, amending the Act by giving “*greater weight to interpretations of data derived from or verified by timely field work (commonly referred to as empirical data),*” would limit the value of predictive modeling. One common method of estimating the long-term probability of a population’s survival is Population Viability Analysis (PVA). PVA permits scientists to identify factors that may threaten the survival of an endangered or threatened species, as well as point to potential solutions that can help the species recover. Such population modeling incorporates empirical data, and is an important tool to help scientists predict how to best prevent extinctions. **We recommend that Congress retain the data quality emphasis within the Endangered Species Act that requires “...the best scientific and commercial data available.”**

THURSDAY EVENING AT THE BARN BUST



THURSDAY EVENING AT THE BARN BUST



THURSDAY EVENING AT THE BARN BUST



OMITTED ABSTRACTS

These abstracts were either received too late for or were accidentally omitted from the April, 2005, abstract issue listing.

ORAL PRESENTATIONS

SULKERS, RACHAEL B.^{1,2}, JOHN W. LAMB², KEVIN C. FITCH², AND JEFFREY L. WALCK¹. ¹Middle Tennessee State University and ²Arnold Air Force Base—Breeding season habitat of Henslow's sparrow (*Ammodramus henslowii*) at the Arnold Air Force Base, Tennessee.

Populations of Henslow's sparrow (*Ammodramus henslowii*; HESP) have declined severely in the past 30 years in North America, primarily due to loss of grassland habitat. The Airfield Barrens at Arnold Air Force Base and nearby Bark Camp Barrens (Coffee County, Tennessee) have HESP, and these sites were the focus of this study. Vegetation was sampled, solar radiation measured, and avian use recorded at 44 random points during the 2004 breeding season: 20 points contained HESP and 24 did not. A MANOVA showed significant differences among fourteen measured variables (Wilks' Lambda, $p=0.000$). Points with HESP had a significantly greater percentage of daily solar radiation ($p=0.008$) than those without HESP, and significantly less coverage of non-native species ($p=0.040$), primarily *Lonicera japonica*, and woody cover ($p=0.016$). Cluster analysis of the vegetation structure separated 39 points (with ≥ 3 bird species) into two broad groups, one consisting mostly of points without HESP (12 of 14 points) and the second with HESP (18 of 25 points). Indicator species analysis done on the avian community at a three-group level separated species into three habitat categories: grassland, grassland-shrubland, and shrubland. HESP was a significant indicator ($p=0.0010$) in a group consisting of grassland species: northern bobwhite, eastern meadowlark, and grasshopper sparrow. Moreover, dickcissels also were found with HESP at two points. The grassland habitat preferred by HESP has high (ca. 96%) daily solar radiation and low coverages of non-native species (1.3%) and woody species (4%). This type of community also supports other rare grassland species.

PACE, CHRIS, JOSHUA ELLIS, KATIE SMITH, AND ALAN F. SMITH. Department of Biology, Mercer University, Macon, GA 31207—Colonization patterns of stream macroinvertebrates on artificial substrate in Hurricane Creek.

Typical Middle Georgia streams are subject to high levels of silt deposition. In response, decreased substrate availability limits biological diversity. Previous colonization studies have utilized transient, biodegradable substrates such as wood and leaf packs, the use of which introduces two or more confounding variables (e.g., nutrients, mutable surfaces). In our experiment, we increased only the substrate availability through the introduction of non-nutritive, non-degradable, synthetic "leaf packs" (syn., pods). Six PVC-anchored stations, each with 12 sets of pods, were placed within a segment of a second-order stream, Hurricane Creek (Brender Demonstration Forest, Jones Co.) during the summer of 2003. Pods consisted of polypropylene and nylon leaf-sized fragments constrained by monofilament netting. Over the course of six months, pods from each station were randomly collected from each station, preserved, and later examined for the presence of macroinvertebrates. Physical parameters (e.g., pH, discharge, temperature, DO) were concurrently recorded at each station during pod harvesting. Identifications to the level of genus, where feasible, or morphospecies, provided pertinent data for the calculation of diversity indices for correlations with the physical parameters as well as elucidating

changes in community structure over time. Faculty Research and Development Grants from the College of Liberal Arts, Mercer University, provided funding for this project.

FITCH, KEVIN C. ARNOLD AIR FORCE BASE, TENNESSEE—The status, management, and monitoring of Eggert's sunflower (*Helianthus eggertii*) on Arnold Air Force Base, Tennessee.

Eggert's sunflower (*Helianthus eggertii* Small) is the only Federally listed "threatened" plant species known from Arnold AFB, TN (AAFB). Management actions for the species are integrated with other aspects of the AAFB ecosystem management program by employing a coarse filter-fine filter approach (Leslie et al. 1996). The coarse filter approach is to restore and maintain vegetation structure and ecological processes in suitable habitats for Eggert's sunflower. Such process-oriented management supports mission flexibility by working at multiple spatial and temporal scales to conserve biological diversity. Fine filter protective measures are also taken to ensure that localized destruction of the species or its habitat do not encroach on mission flexibility by violating provisions of the Endangered Species Act. Management is coupled with monitoring to help track impacts to the plant. The AAFB Conservation program implements management and develops projects to further the recovery objectives outlined by the United States Fish and Wildlife Service (USFWS). This presentation summarizes the management and monitoring conducted in support of the recovery objectives and ultimate delisting of the species as outlined by the USFWS.

DOFFITT, CYNTHIA¹, LINDA M. POTE¹ AND TOMMY KING². Mississippi State University College of Veterinary Medicine, Mississippi State, MS 39762¹ and USDA/WS National Wildlife Research Center, Mississippi State, MS 39762²—*Bolbophorus damnificus* infections of piscivorous birds in the Mississippi Delta

Commercially farmed channel catfish (*Ictalurus punctatus*) are of major economic importance in the delta region of Mississippi. *Bolbophorus damnificus*, a digenetic trematode, has been reported to cause high morbidity and mortality in farm-raised catfish. The American white pelican (*Pelecanus erythrorhynchos*) has been shown to be a definitive host in the lifecycle of the trematode and is commonly seen near commercial catfish ponds. Other piscivorous birds that feed on farm-raised catfish may also serve as definitive hosts. Double-crested cormorants (*Phalacrocorax auritus*), great blue herons (*Ardea herodias*), great egrets (*Ardea alba*), and American white pelicans (*Pelecanus erythrorhynchos*) were challenged with *Bolbophorus damnificus* infected catfish. Bird feces were examined for the presence of trematode eggs and gastrointestinal tracts examined for the presence of adult trematodes.

LEE, MELISSA AND KARLA GAGE. University of Memphis—Evaluation of Plant Performance using Surface Area Measurements.

The well-being of plants may be assessed by a variety of quantitative measures based on changes in size and mass. Recent studies suggest that patterns of resource allocation may be better reflected by measures of plant leaf and root surface areas, which quantify the area of interaction a plant has with the surrounding environment. Comparative studies have indicated that evaluation of leaf surface area is an accurate and precise method of measuring plant performance. The objective of the present study is to quantitatively evaluate plant performance using aboveground biomass, belowground biomass, projected surface area, leaf surface area, and root surface area. We tested the hypothesis that leaf and root surface areas are superior measures of plant performance compared to other measurements. Relationships were studied in the species, *Cucumis pepo*, *Salix nigra*, and *Spartina alterniflora*. The plants were grown in a greenhouse under various experimental

environmental conditions including variable salinity, water levels, and light. The plants were evaluated periodically using both destructive and nondestructive techniques. Surface area measurements are based on digital imaging techniques. Statistical analyses identified significant relationships among quantitative parameters of plant growth in particular leaf surface area and projected surface area. Understanding surface area in relation to other plant characteristics may allow for development of a species specific standard indices to evaluate plant resource allocation patterns, plant health, productivity, and allow for inter-study comparisons. Nondestructive methods are needed for study of rare and/or valuable plants, as well as for repeated measurements of plant performance.

POSTER PRESENTATION

KILHEFFER, JEFF¹, DANNY J. GUSTAFSON^{1*}, AND BRIAN SILLIMAN^{2,3}. ¹The Citadel, ²College of William and Mary, and ³University of Florida—Relative impacts of *Littoraria irrorata* and *Prokelisia marginata* on *Spartina alterniflora* growth.

Spartina alterniflora salt marshes along the southeastern United States are some of the most productive and well-studied ecosystems in the world. The role of physical-chemical forces in regulating *Spartina* growth are well understand, while the importance of grazers remains less clear. Recent studies have shown that the abundant marsh periwinkle, *Littoraria irrorata*, can exert strong control over marsh grass growth through its grazing activities, but nothing is known about its relative effects in comparison to other marsh plant consumers. To test the relative important of snails and insect grazers in regulating marsh plant production, we conducted a field experiment testing top-down regulation of *S. alterniflora* productivity with all combinations of *Littoraria irrorata* (removed, present at 215 periwinkles m⁻²) and *Prokelisia marginata* (removed, unmanipulated) for an entire growing season. Snails reduced *S. alterniflora* productivity by 30% while the insects had no detectable effect on plant growth. Another effect of snail grazing was potentially displacement of the phloem feeding insects, with 50% fewer *P. marginata* within the *L. irrorata* treatments. *Littoraria irrorata* exerts a stronger top-down control of *S. alterniflora* than *P. marginata* in this Charleston Harbor (SC) salt marsh and is likely important in *S. alterniflora* population dynamics within this ecosystem.

OR



Meeting registration staff at the registration table.

FRIDAY EVENING AT THE BANQUET



**ASSOCIATION OF SOUTHEASTERN BIOLOGISTS
TREASURER’S REPORT, FY 1 JANUARY–31 DECEMBER 2004**

I. BEGINNING BALANCE	(Actual bank balance of 31 Dec. 2003)	\$ 84,784
II. RECEIPTS		
Non-Patron Dues	12,180	
Patron Dues	4,500	
Meeting Revenue, 2004 Memphis	18,577	
Enrichment Fund	1,970	
Interest	162	
Martin Microscope Student Research Award	1,000	
ASB/Associated Microscope Senior Res. Award	500	
Brooks/Cole Student Res. Award in Aquatic Biology	200	
TOTAL RECEIPTS		\$ 39,089
III. TOTAL RECEIPTS AND BEGINNING BALANCE		\$123,873
IV. DISBURSEMENTS		
1. Publications		
SE Biology 51(1)	2,471	
SE Biology 51(2)	6,762	
SE Biology 51(3)	4,143	
SE Biology 51(4)	2,223	
Publications Total	15,599	
2. Office Expenses	691	
3. Official Travel	156	
4. Awards and Honoraria		
Graduate Student Support Grants	7,280	
Speaker Honorarium	1,000	
Speaker Travel	219	
Brooks/Cole Award in Aquatic Biology	200	
Martin Microscope Student Award (2003)	480	
Martin Microscope Student Award (2004)	1,000	
Associated Microscope Senior Award	1,000	
Certificates/Plaques	484	
ASB Poster Award (2003)	300	
Total Awards	11,963	
5. Interim Meeting	888	
6. Affiliations	100	
7. Local Committees		
2004 Memphis	4,684	
2006 Gatlinburg	3,262	
Total Local Committees Total	7,946	
8. Symposia, Workshops	50	
9. Bank Charges	132	
10. Liability Insurance	610	
11. A2Z Convention Services	7,200	
12. Meeting Revenue Loss (ASB 2003 DC)*	6,831	
TOTAL DISBURSEMENTS		\$ 52,166
V. ENDING BALANCE	(Actual bank balance of 31 December 2004)	\$ 71,707
VI. NET CHANGE (DECREASE) FOR 2004		(\$ 13,077)

*PLEASE NOTE: The entire meeting loss for ASB 2003 DC is not shown here. Losses also were paid off in 2003, and were shown in 2003 report.

ASSOCIATION OF SOUTHEASTERN BIOLOGISTS

2006 PROPOSED BUDGET

I.	BEGINNING BALANCE		\$	0
II.	RECEIPTS			
	Non-Patron Dues	20,000		
	Patron Dues	6,750		
	Interest	550		
	Meeting Revenue (ASB 2006 Gatlinburg)	17,500		
	Carolina Biological Supply Co. Teaching Award	1,500		
	Martin Microscope Student Research Award	1,000		
	Associated Microscope Sr Research Award (partial)	500		
	Thomson Learning Brooks/Cole Microbiology Award	500		
	Brooks/Cole Student Res. Award in Aquatic Biology	200		
	Enrichment	2,000		
	TOTAL RECEIPTS		\$50,500	
III.	TOTAL RECEIPTS AND BEGINNING BALANCE		\$50,500	
IV.	DISBURSEMENTS			
	1. Publication			
	SE Biology 53(1)	3,000		
	SE Biology 53(2)	6,500		
	SE Biology 53(3)	5,500		
	SE Biology 53(4)	3,000		
	Total Publication	18,000		
	2. Office Expenses	300		
	3. Awards and Honoraria			
	Graduate Student Support	5,000		
	Aquatic Biology Award	200		
	Speaker Honorarium	1,000		
	Speaker Travel	300		
	Research Awards	2,000		
	Certificates/Plaques	300		
	Poster Award	300		
	Carolina Bio Teaching Award	1,500		
	Microbiology Award	500		
	Total Awards and Honoraria	11,100		
	4. Interim Meeting	500		
	5. Local Committees	1,000		
	6. Symposia, Workshops	500		
	7. Web Site	500		
	8. Liability Insurance	600		
	9. A2Z Convention Services	18,000		
	TOTAL DISBURSEMENTS		\$50,500	
V.	NET BALANCE FOR YEAR		\$	0
VI.	ENDING BALANCE		\$	0

ASSOCIATION OF SOUTHEASTERN BIOLOGISTS
ENRICHMENT FUND

1 JANUARY – 31 DECEMBER 2004

I.	BEGINNING BALANCE			\$38,793
II.	RECEIPTS			
	1. Contributions	1,970		
	2. Interest	160		
	Total		2,130	
III.	TOTAL RECEIPTS AND BEGINNING BALANCE			40,923
IV.	TOTAL DISBURSEMENTS			0
V.	ENDING BALANCE			\$40,923
VI.	NET CHANGE			\$ 2,130

ASSOCIATION OF SOUTHEASTERN BIOLOGISTS
MEMBERSHIP OFFICER’S REPORT

2005 ASB DECEASED MEMBERS

Edward A. Crawford	Robert L. Humphries
James E. Deck	Charles S. Shoup
Wilbur Duncan	Eric Fontelle Thompson

2005 ASB EMERITUS STATUS REQUESTS

Loran C. Anderson	Lafayette Frederick
Sisir K. Dutta	E. Douglas Waits

CURRENT MEMBERSHIP

	April 2005*	April 2004*	April 2003	April 2002
Complimentary	20	18	11	11
Contributing	11	11	9	7
Emeritus	65	65	63	55
Family	33	29	28	29
Library	56	55	55	46
Life	11	8	6	0
Patron	8	7	5	5
Regular	787	614	655	513
Student	308	213	360	254
Sustaining	4	3	3	2
TOTAL	1303	1,023	1,195	922

*NOTE: 2005 and 2004 numbers **do not** include memberships paid with registration; 2003 and 2002 do.

Respectfully submitted,
Deborah K. Atkinson, ASB Membership Officer

ASSOCIATION OF SOUTHEASTERN BIOLOGISTS**ENRICHMENT FUND CONTRIBUTORS 2004**

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PATRON MEMBERS AND EXHIBITORS AT THE ANNUAL MEETING



PATRON MEMBERS AND EXHIBITORS AT THE ANNUAL MEETING.



ASB BANQUET ADDRESS

Andrew N. Ash
Department of Biology
UNC Pembroke
Pembroke, NC 28372-1510

FIELD STATIONS

My postdoctoral research career has dealt with the effects of forest management techniques (primarily clearcutting) on populations of *Plethodon metcalfi*, a terrestrial salamander endemic to the Southern Appalachian Mountains of North Carolina. The response of these animals to clearcutting and subsequent forest succession is extremely interesting, and so the temptation to describe my findings to this group was strong. However, much of what I have learned might be pretty boring to scientists other than myself, and I know that at this time on a Friday evening many of you would rather be in other places doing other things. Therefore, I concluded that a topic more general than my research, with broader application to many of you, might be in order.

As I was thinking about more generalized topics, I happened upon an interesting thought: During my 28-year professional career, I have worked at three different academic institutions. However, over the same span of time, my research has been performed at a single location—The Highlands Biological Station (HBS). Located in Highlands, Macon County, North Carolina just 6 miles Northwest of Ellicott's Rock (the point where North Carolina, South Carolina and Georgia meet on maps), HBS is presently an inter-institutional program of the University of North Carolina. A year-round biological Field Station located on the Highlands Plateau in the southern Appalachian Mountains of southwestern North Carolina, HBS has a principal mission of promoting research and education in biodiversity studies (ecology, systematics, evolution, and conservation), with special emphasis on the diverse flora and fauna of the region. Founded as a private institution in 1927 through the combined efforts of prominent local residents and a group of biologists from leading universities in the Southeast, HBS built its first laboratory in 1930. I consider myself very lucky to have "discovered" HBS at the start of my career in 1979.

My association with HBS has been helpful to my career in many ways: (1) At the beginning, I was an ecologist, but with no training in herpetology. Dick Bruce, the station director for most of my tenure at HBS, is a skilled herpetologist who introduced me to salamanders and helped me develop appropriate research techniques. (2) I had the opportunity to exchange ideas with many extremely bright individuals who helped me refine my techniques and research protocols. The list would be very long, but the following individuals were extremely helpful: Chris Beachy, Dick Bruce, Nelson Hairston, Rich Lenski, Don Shure, Steve Tilley and Wayne Van Devender. (3) I was able to teach field classes offered by my home institutions at the station. Exposing students to mountain ecosystems in the HBS setting was an invaluable educational tool. Students remember little of what I said in class, but they always remember the Highlands field trips. (4) For many years, HBS has hosted periodic conferences on the biology of Plethodontid

salamanders. As an attendee and presenter at these conferences, I benefited greatly from the international assemblage of researchers who came to HBS to share their knowledge. (5) I have made some of my very best friends in the scientific community at HBS.

Reflecting on the importance of HBS to my career in science, I decided that my Banquet Address would discuss Biological Field Stations in the ASB service region. If one visits the Organization of Biological Field Stations (OBFS) web page, there are 38 member stations listed for the ASB service region. A listing of numbers of stations by state is as follows: Alabama – 0, Florida – 12, Georgia – 2, Illinois – 5, Kentucky – 2, Louisiana – 4, Maryland – 0, Mississippi – 1, North Carolina – 2, South Carolina – 2, Tennessee – 2, Virginia – 4, West Virginia – 2. In terms of accurately reporting the existence of Field Stations, this number is impossibly low. I reside in North Carolina, and I can think of at least 10 Field Stations that are not members of OBFS, not the least of which are the UNC and Duke Marine Labs. I will have more to say on this issue in a minute.

Of what value are Field Stations to the scientific community and the greater public? Of the 38 stations listed for the ASB service region by OBFS, 23 provided enough information to be included in a database. Here are some of the basic characteristics of these institutions. They are open a mean of 11.6 months a year with a minimum of 7 months and a maximum of 12 months. A total of 80,836 acres is available for use by researchers (mean: 4,042 with a minimum of 3 acres and a maximum of 17,500 acres). These figures do not include nearby public lands that may be available for use. A total of 990 beds are available to students and researchers (mean 43, minimum 0, maximum 360). There are 55 classrooms for instruction (mean 2.4). Two hundred and sixty faculty affiliate with these stations (mean 14.4, minimum 0, maximum 54). In terms of services, 26% of these stations serve food, 96% provide educational outreach for K-12 education in their service areas, and 39% provide assistance for teacher training. Publication lists are available from 70% of the stations. The total of publications from all stations is 12,365 (mean 824, minimum 4, maximum 6,000) with an average year of first publication being 1960 (earliest year 1890, most recent year 2002). And these data represent only the 23 stations in the ASB service region!

My conclusion is that while Biological Field Stations provide substantial services to the scientific community, they are under-advertised, under-utilized, and are often overlooked by or unknown to individuals at locales other than the host institution. In my opinion, this is a terrible waste of educational and research resources and opportunities. Field Stations provide researchers with intimate and ongoing contact with appropriate ecosystems that may not be present at the researcher's site of employment. Because this is so, they are vital to global, national and regional research efforts. Field Stations provide educational outlets in field settings that cannot be duplicated. Field Stations obviously support ecologists, systematists, and organismal biologists, but they are important resources for many other sorts of biologists as well.

Because of the importance of Biological Field Stations, and because there is no comprehensive database for Field Stations in the ASB service region, I propose that ASB develop such a Field Station database and post it on our web page as a service to researchers and educators. I am requesting that the ASB executive

committee make this endeavor a priority in the near future. I will be glad to lend my services to such a project. If this project could be accomplished, I am sure that Field Stations would become every bit as important to the development of future generations of biologists in the Southeast as they have been to mine.

Here's to Field Stations, long may they prosper.

CR



Past President Claudia L. Jolls and Andrew N. Ash.

Reflections from ASB 2005 in Florence, Alabama

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The venue of the ASB 2005 posed some interesting intelligent “tinkering” from the very name “Muscle Shoals”, Alabama, town adjacent to the Tennessee River. On the day I arrived at the small Muscle Shoals airport, I asked a fellow passenger in the plane: Why Muscle? He swiftly replied: “Ask a local”. In a pre-warming ceremony on the night before the first day of ASB meeting, I met our host Dr. Terry Richardson in the Holiday Inn with a ‘glass’ in his hand and in a sober mood he instantly came up with two hypotheses. (1) It is derived from the diversity and abundance of the fresh-water mussels in the shoals in Tennessee River. (2) It is named in recognition of the strong muscle of the boatmen, who fished and dug mussels. As a conservation biologist, I prefer the former.

The construction of the Wilson Dam, one of the largest dams in the world, made a difference to the ecology and economy of the region. More than 270 freshwater mussels occur in North America and about 100 species were known within a few miles near “Mussel Shoal” (Dr. Ronald V. Dimock, ASB longtime member from the Wake Forest University in North Carolina, joins me in proposing to rename this town). The biodiversity of clams dwindled in recent decades. Gene flow between populations was hindered and too much commercial claming led to the decline or disappearance of many clam species.

The highlight of the ASB 2005 was, of course, the keynote speech entitled “Lost in phenotypic space: Why living organisms look the way they are?” by Dr. Massimo Pigliucci of S.U. N. Y., Stony Brook. His simple elucidation of Darwin’s concept of “Natural Selection” as a force in speciation was a central focus in his talk and the example of leaf numbers and flowering time in the plant *A. thaliana*. (Glad he used the binomial nomenclature in these critical days when some backward-marching PhyloCode biologists are questioning the Linnaean style of classification—time we stop these cladistic clowns!) I am wondering how global warming in the next few decades can impact the flowering time of plant species (angiosperms) that extend northward in the Southeastern United States. Massimo did not ignore zoology and at the end he brought a ‘Drosophila’ story with a nice photo of two mating fruit flies (and joked about sex as a necessary part of any keynote address to keep the audience awake!). At the end, ASB president-elect Dr. Dwayne Wise wisely posed a question on biocomplexity of mutations in species with few genes vs species with as many as 30,000 genes in *Homo sapiens* (See my article on “Recollections from 2002 ASB” in *Southeastern Biology* Vol. 49 (4): 369 – 371, Dec. 2002).

Another big event in ASB 2005 was a symposium on “Teaching Evolution and the Challenge of Intelligent Design.” Every biologist ponders on this topic and worries about it or ignores it! ASB education committee under the leadership of its chair Dr. John V. Aliff (Editor of *Georgia Journal of Science*) coordinated this symposium and assembled a group of four eminent speakers, including Massimo (the first speaker). His presentation in the symposium, unlike the keynote address, was full of humorous and elegant PowerPoint data-displays, to

prove that creationists are philosophical naturalists and scientists are methodological naturalists. His reasoning for an early morning headache to either the red wine consumed in the previous night or the music listened to was a good example of the hypothesis-building approach of science. He argued that it need not be one or the other. In fact, the CNN late news he heard was perhaps the reason for the headache. This is how science is practiced with development of hypotheses and rejecting or accepting it to formulate a theory.

In my opinion, the only non-biologist amongst the symposium participants in the crowded room was the second speaker Barbara Forrest, Professor of philosophy (not biology) from the Southeastern Louisiana University. Her talk made the audience aware of a crisis in the making about the faith-based opposition to teaching evolution in schools and colleges. She virtually accused the creation-advocates Philip Johnson, Jonathan Well, Bruce Chapman, Rev. Moon (Yale Ph.D. plus a doctorate in Biology) and several other anti-evolution pundits as the culprits for this 'bio-crisis' that challenges the wisdom of evolutionary theory as an essential part of curriculum. I remember hearing Theodozios Dobzhansky in a talk he gave, when I was a graduate student, saying, "Nothing in biology makes sense without the concepts of evolution." Although Barbara never mentioned Rev. Jerry Falwell in her talk, she implied that the ID-advocates have penetrated into the US Congress and the White House to make fundamental changes in federal policies that are not science-friendly. She appealed to the audience to join the National Center for Science Education (NCSE) to combat the battle to put science in the front seat or behind the wheel.

The penultimate speaker Dr. Taner Edis (a Ph.D. from John Hopkins), a physicist and a researcher at the prestigious Lawrence Livermore National Laboratory, approached the topic from a different angle, with references to quantum mechanics and structure of water or DNA. He pointed out the complexity and symmetry of structure of the snowflake. The point he was arriving at was really to identify ID as a sophisticated anti-evolution thesis. He emphasized the importance of DNA not as a structure but as a code. His birth and experience in Turkey made him realize that American and Turkish culture, despite two distinct religions, Christianity and Islam, are similar in a God-focused public policy as opposed to the European culture.

Geologist Dr. Keith Miller from Kansas State University was the final symposium speaker. I thought he was going to attack the 'young earth theory' of the creationists from geological perspectives. But his approach was more philosophical and he argued that the nature of science, rather than science *per se*, is also part of science education. He rightly recognized that the reason for misconception was due to lack of communication to the public. Evolution is not inherently atheistic. Or is it the contrary? Are the views on evolution and creation mutually exclusive? The goal of science, he explained, is not to find facts but to explain how facts interact with dynamic nature of science. Miller's premise entailed that good science or good theory must embrace the following three, namely beauty (aesthetics), symmetry and simplicity. He concluded that science is conceptually neutral and theories are accepted because of political and social implications. During the subsequent panel discussion I asked the speakers, particularly Barbara (the only non-biologist): What do we do now in the United States in this "bio-crisis" which has led to decline in federal funding for the National Science Foundation that supports basic science research?" Her response implied that the answer is in the hands of US Congress.

The Thursday night social in the 'Long Horn Rodeo' was a blast (Fig. 1). The food was superb and the mood was great. The dancing floor in front of the band was vibrating with talented dancers. A few ASB members were bold to ride the "bull" and on the Friday night banquet, they saw past ASB president Dr. Andy Ash riding a salamander (not a bull!). The most energetic and affable Dr. Claudia Jolls (ASB president) was the MC during the banquet, awarding honors and certificates that made us all realize what a great organization ASB is.

The ASB conference setting in the elegant Shoals Conference Center, where the meetings were held, is located right adjacent to the new and imposing Hotel complex with a tall rotating restaurant. Maybe we should return to the University of North Alabama in Florence for another ASB meeting in a not-too-distant future. I felt the need to go to the campus for sightseeing. Lo and behold, I saw two huge African Lions in the George Carroll Lion Center right at the entrance of the campus. How many US University campuses have a wild lion? It turned out the day I went there was the male lion's birthday. There was a celebration.

Another sight seeing spot during this ASB meeting was the Helen Keller memorial museum in Tuscumbia, a lovely little town close to Mussel Shoal. Going through the museum, I was deeply intrigued by this great blind Alabamian lady Helen Keller who visited four continents and met great scholars including the poet and Nobel laureate Rabindranath Tagore In India.

Corridor talks in conferences are usually fruitful. Dr. Ed Mills (2004-2005 chair of ASB conservation committee) saw me in the corridor and handed me a file with a whisper: "Bob, you are now the chair of ASB conservation committee for the year 2005-2006." Next day, I saw Dr. Pat Parr (former ASB president) in a sofa in the corridor and we discussed the possibility of a symposium in ASB 2007 in the University of South Carolina in Columbia on "Ecosystem Management in the Southeastern United States and the invasion of non-native species." You will hear more about this symposium in ASB 2006 in Knoxville, Tennessee.



Fig. 1. Dr. Robert Y. George. ASB Conservation committee chair for 2005-2006, (left extreme) seated with 4 ASB student members serving as receptionists at the main entrance of the 'Long Horn Rodeo', Thursday Night Social. ☞

ASB Southeastern Biology Staff, ASB Officers, and Executive Committee Members-at-Large, 2005-2006

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2006 MEETING OF THE ASSOCIATION

CALL FOR PAPERS**THE 67TH ANNUAL MEETING**

**HOSTED BY:
UNIVERSITY OF TENNESSEE
KNOXVILLE**

MEETING SITE: GATLINBURG, TN

DATE: MARCH 29-APRIL 1, 2006

Please note the following deadlines that are to be met before our 67th annual meeting. **This will be the only call for papers!**

- 15 OCTOBER** Nominations for ASB officers and executive committee due to the Nominations Committee.
- 18 NOVEMBER** Titles and abstracts of papers and posters, including those applying for awards, due to the Program Committee. This will be the *only* call for papers. They must reach the Program Committee by this date.
- 18 NOVEMBER–7 JANUARY** Submission materials for research awards due to respective research awards committees.
- 17 JANUARY** Meritorious Teaching Award materials due to Meritorious Teaching Award Committee. Application for graduate student travel awards due to Graduate Student Travel Awards Committee.

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FOR THE 67th ANNUAL MEETING
UNIVERSITY OF TENNESSEE
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MEETING SITE: GATLINBURG, TN

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DEADLINE: FRIDAY, 18 NOVEMBER 2005

Individuals presenting papers or posters are expected to be members of ASB or an affiliate society!

INSTRUCTIONS FOR SUBMITTING ABSTRACTS

Submit a single e-mail with a **single** MS-Word attachment to the program chair, Jake Weltzin (jweltzin@utk.edu). Entitle your attachment with the author's last name and an abbreviated abstract title (for example, "smith reproductive biology").

Please number and list the following information items:

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5. ABSTRACT TITLE
6. PRESENTATION TYPE: PAPER or POSTER

NOTE: All oral presentations will be on PowerPoint or PowerPoint-compatible software with a backup copy on overhead! Slide projectors will not be available. Poster space is 4' x 4'. Bring you own pins or Velcro.

7. CHOOSE THE APPROPRIATE SECTION(S) TO WHICH YOUR PAPER OR POSTER SHOULD BE ASSIGNED. IF YOU CHOOSE MORE THAN ONE, RANK SECTIONS AS TO YOUR PREFERENCE (1 = MOST PREFERRED).

Animal Behavior
Animal Ecology
Animal Physiology
Aquatic, Wetland & Marine Mgmt.
Developmental Biology
Genetics, Cell & Molecular Biology
Herpetology
Ichthyology

Invertebrate Zoology & Entomology
Microbiology
Ornithology
Parasitology
Plant Biology
Plant Ecology
Plant Systematics
Teaching Biology

8. **Awards:** If you intend to apply for one of the following awards, please indicate this so that the Program Committee can schedule talks appropriately. You must check that you want to be considered for an award

during the abstract submission. Students must be first author to be considered for student awards.

For many awards, you **MUST** also submit an abstract to the award committee chairperson. Please see applicable rules for each award at www.asb.appstate.edu/member.htm and in this issue. If you do not follow these instructions, you may not be considered for the award.

ASB Senior Research Award (\$1,000). Sponsored by Associated Microscopes, Inc.

ASB Student Research Award (\$1,000). Sponsored by Martin Microscope Company.

Brooks/Cole Student Research Award in Aquatic Biology (\$200). Sponsored by Thomson Learning Brooks/Cole Publishing Company.

ASB Research Award in Microbiology (\$500). Sponsored by Thomson Learning Brooks/Cole Publishing Company.

ASB Student Poster Award (\$300). Sponsored by ASB.

Eugene P. Odum Award (\$500). Sponsored by the SE Chapter of ESA.

Elsie Quarterman-Catherine Keever Award (\$300). Sponsored by the SE Chapter of ESA.

NC Botanical Garden Award (\$200). Sponsored by the NCBG.

SEASIH Student Travel Awards (\$50). Sponsored by the SE Chapter of ASIH. See <http://www.asih.org>. ASIH will meet in New Orleans in 2006.

SEASIH Student Ichthyology Award (\$100). Sponsored by the SE Chapter of ASIH. See <http://www.asih.org>. ASIH will meet in New Orleans in 2006.

SEASIH Student Herpetology Award (\$100). Sponsored by the SE Chapter of ASIH. See <http://www.asih.org>. ASIH will meet in New Orleans in 2006.

SAC/SWS Student Travel Awards (\$100). Sponsored by the SA Chapter of SWS.

BSA Student Plant Science Award (\$100) plus travel expenses (\$300). Sponsored by the SE Section of BSA.

SFC Student Travel Awards (\$100). Sponsored by the SFC. See <http://www.asih.org>. ASIH will meet in New Orleans in 2006.

9. **Abstract**

Please follow guidelines below.

The abstract must be in 9 point Arial (if your computer does not have Arial, use Times New Roman) with margins of 1 inch right and 2 ½ inches left. Do not place hard returns at ends of lines; allow word wrapping. The abstract (not including the authors' names and addresses) must not exceed 250 words. Single space all typing.

a. Indent author, institution, and title information 1 tab stop (1/2 inch). Type in the following order: AUTHOR'S NAME(S) all capitalized; last name first for first author; other authors' names (if any), first names first. If two authors,

- separate names with “AND”. In the case of more than two authors, separate all but the last name with a comma and separate last two with “AND”. End with a period.
- b. Institution(s) follow authors’ names directly. Maintain the same indentation as names and end with a dash (—). In the case of two or more authors from different institutions, place all author names together first, followed by all institutions in the same order. If necessary, key the authors’ names to the institution with a superscript number.
 - c. Start the title immediately after the dash without a space. Capitalize first letter of first word, then only proper and scientific names as customary. Underline all of the title, and maintain the same indentation as the name and institution. End with a period. Leave one full blank line between title and abstract text.
 - d. Start text of abstract on a new line. Do not indent first line. Use one paragraph for entire text. Do not put any reference citations in the abstract. Justify both left and right margins.
 - e. Single space all typing. Put taxonomic names in italics.

EXAMPLES

RADENBAUGH, TODD A. United States Peace Corps, Jamaica—Major plant community types of Duncan Bay, Jamaica, West Indies.

There is an urgent need to record and describe the coastal ecosystems on the North coast of Jamaica before they are severely altered by human.....

DAVIS, JENNIFER¹ AND DWAYNE WISE². Shorter College¹ and Mississippi State University²—Causes and consequences of elevated levels of meiotic abnormalities in laboratory colonies of the crane fly *Nephrotoma suturalis*.

Progeny of wild-caught crane flies were compared to a laboratory colony of *Nephrotoma suturalis* for mean % chromosomal abnormalities, mean % survival, and parameters indicative of



INSTRUCTIONS FOR SUBMITTING ORAL PRESENTATIONS

All oral presentations will be done using Microsoft PowerPoint only. Presenters should bring a backup consisting of overheads. We are requesting that final presentations be submitted on CD to the program committee by March 24. The first author's name and truncated title should be written on the upper surface of the CD using an indelible marker.

Submit CD by the March 24 to: **ATTN: ASB 2006 Annual Meeting, c/o Dr. Joseph H. Williams, Department of Ecology and Evolutionary Biology, University of Tennessee, Knoxville, TN 37996-1610.**

ASB 2005 FIELD TRIPS

The list of field trips is tentative. More information will be available in the December issue of *SE Biology*.

1. ATBI—an overview of the operation of this program and the benefits it gives to the park and the public.
2. Environmental Challenges in preserving the biological integrity of the Park—a look at air quality issues, invasive species and proposed road construction.
3. Plant Communities of the Smokies—a firsthand view of several biological communities unique to the Southern Appalachians. Travel from Sugarlands to Clingman's Dome.
4. Birds in the Smokies—a firsthand view of the great diversity of birds in the Smokies. Travel from Sugarlands to Cades Cove.
5. Salamanders of the Smokies—a firsthand view of the great diversity of salamanders in the Smokies.
6. Black Bears in the Smokies—an opportunity to view bear habitat, learn about habits and issues of human interactions with them.

Activities for Guests

Within walking distance (or a short trolley ride) from the hotel and convention center, there are a variety of activities for guests and spouses. Visit www.gatlinburg.com for full listings and hyperlinks to all the fun things to see and do! In fact, you can order a free Gatlinburg Vacation Guide direct from the site!

CR



ASB Meetings Coordinator Scott Jewell.

SPECIAL REMINDERS FROM THE PRINT EDITOR

ASB BANQUET ATTENDANCE

Please keep in mind that recipients of ASB awards must be present at the annual ASB banquet to receive the award. Therefore, all applicants for ASB awards must attend the banquet to insure the presence of the winners.

EXTRA ABSTRACT SUBMISSION

Besides sending abstracts of papers and posters to the Program Committee by November 18, 2005, anyone wishing to be considered for an award must send an abstract to the respective award committee chairperson in order to be considered. Checking the box on the registration form for the award is not enough. An abstract must be sent to the chairperson by January 7, 2006.

INSTRUCTIONS FOR SUBMITTING ORAL PRESENTATIONS

All oral presentations will be done using Microsoft PowerPoint only. Presenters should bring a backup copy as well as a backup consisting of overheads.

FINAL SUBMISSION OF CD

We are requesting that final presentations be submitted on CD to the program committee by March 24, 2006. The first author's name and truncated title should be written on the upper surface of the CD using an indelible marker.

Submit the CD by the March 24th deadline to: ATTN: ASB 2006 Annual Meeting, c/o Dr. Joseph H. Williams, Department of Ecology and Evolutionary Biology, University of Tennessee, Knoxville, TN 37996-1610.

Nomination for ASB Officers and Executive
Committee Positions

DEADLINE: 15 OCTOBER 2005

To members of the Nominating Committee: I wish to suggest that you consider the following ASB member(s) in selecting nominees for officers and executive committee positions. *(Please include the institutional address of each nominee.)*

PRESIDENT-ELECT _____

VICE-PRESIDENT _____

SECRETARY _____

EXECUTIVE COMMITTEE *(two will be elected for three-year terms)*

MAIL TO: DR. ANDREW N. ASH, Department of Biology, University of North Carolina, Pembroke, NC 28371-1510; (910) 521-6418; andy.ash@uncp.edu.

NAME & ADDRESS OF NOMINATOR _____

SUPPORT AWARDS FOR GRADUATE STUDENT MEMBERS OF ASB

DEADLINE FOR POSTMARK: 17 JANUARY 2006

Limited funds are available to partially defray the expenses of graduate students attending the Annual Meeting. **The awards are for lodging and meals only, including the ASB Banquet.** Departments are urged to provide transportation for their graduate students. *Recipients must be members of ASB.* See ASB web site for membership application or renewal forms. The guidelines for application are as follows:

- (a) *The recipient is a current member of ASB.*
- (b) The recipient must be presenting a paper or poster at the Annual Meeting and must include a separate copy of the abstract of the paper or poster to be presented along with the application.
- (c) The recipient must be currently enrolled as a graduate student in the department where he/she conducted this research.
- (d) Student travel awards are granted on a competitive basis. Applicants must document expected expenses and list other sources of financial support for this meeting, including institutional aid, shared lodging and shared transportation.
- (e) In a paragraph, give a brief history of your education to date: indicate how many years you have been in graduate school and the expected date of completion of work for your degree, your major field of study and research, publications including those in press and in preparation, degree sought, name of major professor and any other pertinent details.
- (f) Give your source(s) of support while in graduate school: e.g. NSF, NIH, USDA, Teaching Asst., Research Asst., etc.
- (g) Include a letter of recommendation for an ASB support award from your faculty research advisor. This letter should comment on the work being presented and indicate the financial need of the student presenter. It should also indicate whether any departmental or other funding is available to the student.
- (h) Send application with supporting letter to: Dr. Leon Jernigan, Department of Biology, University of North Carolina, Pembroke, NC 28372-1510; (910) 521-6884; Fax (910) 521-6649. In addition, e-mail a copy of your completed application documents without the supporting letter to leon.jernigan@uncp.edu.
- (i) Applicants will be notified of the decision of the Committee as soon as is practical. Recipients of the award will pick up their checks at the ASB table at the meeting.

GUIDELINES FOR POSTER PRESENTATIONS

Poster sessions have been incorporated as a regular means of scientific presentation at the annual ASB meetings. This type of presentation provides a more informal environment that encourages a direct interchange of ideas and discussion between presenter and audience. Poster presentations are open to all ASB members. Adherence to the following guidelines helps ensure the effectiveness of the poster presentation and consideration for the award.

- (1) Display should fit on a 4' h x 4' w board suitable for thumbtacks, pushpins, or Velcro.
- (2) Poster must be displayed from 10 a.m. Thursday through 5 p.m. Friday. Authors will be required to be present at specified times during the Annual Meeting.
- (3) Poster should be carefully planned to maximize clarity and simplicity in conveying information.
- (4) Poster should have a heading, including a title, author, and author's institution(s). This heading should be placed at the top in letters no less than **3 cm** high.
- (5) The body of the poster, including text, figure legends, and table captions, should be in type no smaller than **18 pt (3-4 mm)** and *must* be legible from a distance of about 1-2 meters.
- (6) The body should be self-explanatory and should include figures, tables, graphs, maps, or photographs displayed in a well organized, coherent, and easy-to-follow sequence from top to bottom. Each illustration should contain a caption. *Do not overcrowd the display.* Significance will be one of the criteria looked for in judging the posters.
- (7) A limited degree of text may be included, but care should be taken not to overwhelm the audience.
- (8) A large, abbreviated version of the abstract should be presented at the top of the poster, but below the heading. A clear listing of specific conclusions should appear at the bottom or end of the presentation. An abstract must also be submitted to the award committee chair.

Further inquiries may be directed to the Chair of the ASB Poster Award Committee: Dr. Victoria L. Turgeon, Department of Biology, Furman University, Greenville, SC 29613-0418; (864) 294-3791; fax (864) 294-2058; victoria.turgeon@furman.edu.

RESEARCH AWARDS

SPECIAL NOTICE: Please read carefully the description of requirements for the ASB award for which you apply. Note especially that recipients of ASB awards must be present at the annual ASB banquet to receive the award.

ASB SENIOR RESEARCH AWARD (\$1000)

Given for an especially meritorious manuscript presented orally by the author(s) at the Annual Meeting of ASB. The presenter must be a member of ASB. In order to qualify for this award sponsored by Associated Microscopes, Inc., the author(s) must have presented the work orally at any previous annual meeting or have submitted an abstract by the 18 November abstract deadline for an oral presentation at the next annual meeting. The manuscript must either have been submitted for publication or be ready for submission and carry the format of the journal to which it will be (or has been) submitted. Author(s) must submit four copies of their manuscript and short biographical sketches of each author. Manuscripts received by 7 January 2006 will compete for the 2006 Senior Research Award. Manuscripts not received by this deadline (but submitted by 7 January 2007) will remain in competition for the 2007 Senior Research Award, subject to the following condition, which applies to ALL manuscripts eligible for this award: manuscripts may be in press, but not published prior to the last annual meeting. Judges will use a standard evaluation form that includes the following criteria: significance of ideas, soundness of hypotheses, originality (creativity), quality of methodology, validity of results, soundness of conclusions, clarity, completeness, organization, and contribution to the field. At the discretion of the Senior Research Award Committee, the award may be withheld or it may be split in case of a tie. *The recipient of the award must be present at the annual ASB banquet to receive the award.*

Committee Chair: Dr. Lisa Kelly, Department of Biology, University of North Carolina, Pembroke, NC 28372-1510; (910) 521-6377; Fax (910) 521-6649; lisa.kelly@uncp.edu.

ASB STUDENT RESEARCH AWARD (\$1000)

Given for an especially meritorious manuscript presented orally by the author(s) at the Annual Meeting. In order to qualify for presenting the paper, the author(s) must submit an abstract by the November deadline. Papers submitted for the competition must be received in triplicate and in their entirety by the January deadline and must be journal-ready manuscripts worthy of publication. The student award (sponsored by Martin Microscope Company) is given to the senior author if she/he is a graduate or undergraduate student at the time of presentation. To qualify, author(s) must submit an abstract, title form, and application for the award by 18 November 2005, and four copies of the journal-ready manuscript with abstract, title form, and short biographical sketches of each author by 7 January 2006. Judges will use a standard evaluation form that includes the following criteria: significance of ideas, soundness of hypotheses,

originally (creativity), quality of methodology, validity of results, soundness of conclusions, clarity, completeness, organization, and contribution to the field. At the discretion of the Student Research Award Committee, the award may be withheld or it may be split in the case of a tie. Papers may be in press, but not published prior to the previous annual meeting. Only members of ASB are eligible and the recipient of the award must be present at the annual ASB banquet to receive the award.

Committee Chair: Dr. Katie Greenberg, USDA Forest Service, 1577 Brevard Road, Asheville, NC 28806; (828) 667-5261, ext. 118; Fax (828) 667-9097; kgreenberg@fs.fed.us.

BROOKS/COLE STUDENT RESEARCH AWARD IN AQUATIC BIOLOGY (\$200)

The purpose of the award is to encourage excellence in aquatic biology research by undergraduate and graduate students. The award is sponsored by Thomson Learning Brooks/Cole Publishing Company. Students who are members of ASB and whose work is sponsored by a professional biologist who is also an ASB member are eligible. The paper must be based on research designed and completed by the student and it must be presented orally by the student as senior author at the Annual Meeting. To be eligible, author(s) must submit an abstract, title form, and application for the award by 18 November 2005, four copies of the journal-ready manuscript with abstract, title form, and short biographical sketches of each author by 7 January 2006 and a letter from the sponsor affirming student status at the time the research was completed and sponsorship of the student to the chair of the Student Research Award Committee. Judges will use a standard evaluation form that includes the following criteria: significance of ideas, soundness of hypotheses, originality (creativity), quality of methodology, validity of results, soundness of conclusions, clarity, completeness, organization, and contribution to the field. At the discretion of the Student Research Award Committee, the award may be withheld or it may be split in the case of a tie. It is intended that aquatic biology be broadly interpreted. For example, research projects on aquatic organisms, wetland biota, and water quality are all eligible. The recipient of the award must be present at the Annual ASB Banquet to receive the award.

Committee Chair: Dr. Katie Greenberg, USDA Forest Service, 1577 Brevard Road, Asheville, NC 28806; (828) 667-5261, ext. 118; Fax (828) 667-9097; kgreenberg@fs.fed.us.

ASB RESEARCH AWARD IN MICROBIOLOGY (\$500)

Sponsored by Thomson Learning Brooks/Cole Publishing Company, the award is given for an especially meritorious oral presentation of research results by the author(s) at the annual meeting. The purpose of the award is to stimulate greater participation at the Annual Meeting in the broad area of prokaryotic and eukaryotic microbiology including cell biology and physiology, molecular biology, and genetics. The presentation must deal clearly with one of these topics and

should represent substantially completed work. In order to qualify for this award, the senior author must request consideration for the award on the abstract submission form, submit one copy of the title and abstract to the ASB Program Chair by the 18 November 2005 deadline, and submit a second copy by the same date to the Microbiology Award Committee Chair. **Only members of ASB are eligible and the recipient of the award must be present at the Annual ASB Banquet to receive the award** (go to <http://www.asb.appstate.edu/member.htm> for membership application or renewal form).

Committee Chair: Dr. Donald H. Roush, Department of Biology, University of North Alabama, Florence, AL 35632; (256) 765-4435; Fax (256) 765-4430; dhroush@una.edu.

ASB STUDENT POSTER AWARD (\$300)

Given for an especially meritorious poster presentation by the author(s) at the Annual Meeting. The purpose of the award is to stimulate greater student participation at the Annual Meeting. To qualify for this award, the senior author **must be a graduate or undergraduate student at the time of presentation, must be a member of ASB, must submit an abstract by the 18 November 2005 deadline, and must be present at the Annual ASB Awards Banquet.** Student poster presentations must also adhere to the "Guidelines for Poster Presentations." Only student authors who request consideration for the poster award on the abstract submission form will be judged for the award. In addition to adherence to the "Guidelines for Poster Presentations," student poster presentations will also be judged using the following specific criteria:

- (1) Overall aesthetics and attractiveness of presentation
- (2) Ease of reading from a distance (1-2 meters)
- (3) Clear and concise organization
- (4) Clearly stated hypothesis or study objectives
- (5) Soundness of methods for testing hypotheses or meeting study objectives
- (6) How well conclusions are supported by results

At the discretion of the ASB Poster Award Committee, the award may be withheld or it may be split in the case of a tie. Some posters may also be awarded "Honorable Mention" at the discretion of the ASB Poster Award Committee (Honorable Mention awardees receive no monetary award). Further inquiries may be directed to the chair of the ASB Poster Award Committee.

Committee Chair: Dr. Victoria L. Turgeon, Department of Biology, Furman University, Greenville, SC 29613-0418; (864) 294-3791; fax (864) 294-2058; victoria.turgeon@furman.edu.

EUGENE P. ODUM AWARD (\$500)

Given by the Southeastern Chapter of the Ecological Society of America for the best ecological paper presented by a student. Undergraduate and graduate students are eligible, and the student must be the sole or senior author. The paper must deal with a clearly ecological topic and should represent substantially completed work. It should be presented in one of the following sections: Aquatic Ecology, Plant Ecology, or Animal Ecology. One copy of the title and abstract should be sent to the ASB Program Chair by 18 November 2005, and a second copy must be sent by the same date to the Odum Committee Chair.

Committee Chair: Dr. Nicole Turrill Welch, Department of Biology, Middle Tennessee State University, Murfreesboro, TN 37132; (615) 898-5372; Fax (615) 898-5093; nwelch@mtsu.edu.

ELSIE QUARTERMAN-CATHERINE KEEVER AWARD (\$300)

Given by the Southeastern Chapter of the Ecological Society of America for the best ecological poster presented by a student. This award was given for the first time in 2005. Undergraduate and graduate students are eligible, and the student must be the sole or senior author. The poster must deal with a clearly ecological topic and should represent substantially completed work. It should be presented in a regular contributed poster session. One copy of the title and abstract should be sent to the ASB Program Chair by 18 November 2005, and a second copy must be sent by the same date to the Quarterman-Keever Committee Chair.

Committee Chair: Dr. Frank Gilliam, Department of Biology, Marshall University, Huntington, WV 25755; (304) 696-3636; Fax (304) 696-3242; gilliam@marshall.edu.

THE NORTH CAROLINA BOTANICAL GARDEN AWARD (\$200)

Given by NCBG (through the Southeastern Section of the Botanical Society of America and the Southern Appalachian Botanical Society). This is awarded for a paper presented at the annual ASB meetings that best advances our understanding of the biology and conservation of the southeastern plants and thus contributes to the mission of the North Carolina Botanical Garden. Of special interest to the Garden are the rare plant species of the Southeast: why they are rare; how they interact with plants, animals, and their environment; and what can be done to ensure their survival. The paper may deal with a broad area including systematics, ecology and conservation. All individuals who are eligible to present at the ASB meetings are eligible for this award. They may be students, faculty or others.

Committee Chair: Dr. John Randall, Department of Biology, University of North Carolina, Greensboro, NC 27412; (919) 962-0522; fax (919) 962-3531; jrandall@email.unc.edu.

**TRAVEL SUPPORT AWARDS FOR STUDENT MEMBERS OF THE
SOUTHEASTERN DIVISION, AMERICAN SOCIETY OF
ICHTHYOLOGISTS AND HERPETOLOGISTS**

and

**SOUTHEASTERN DIVISION, AMERICAN SOCIETY OF ICHTHYOLOGISTS AND
HERPETOLOGISTS OUTSTANDING STUDENT PAPER AWARDS
ICHTHYOLOGY (\$100); HERPETOLOGY (\$100)**

The SE Division will meet with ASIH in New Orleans in 2006. For information, access the ASIH web site at <http://www.asih.org>. Click on awards and grants.

**SOCIETY OF WETLAND SCIENTISTS
SOUTH ATLANTIC CHAPTER
STUDENT TRAVEL AWARD**

The South Atlantic Chapter of the Society of Wetland Scientists (SWS) will again offer its student travel award to support students presenting wetland research at the ASB annual meeting. We will award at least \$100 to a maximum of five students. The Chapter's Awards and Executive Committees will judge the applicants based on the scientific quality and importance of their research as described in the abstract. All students presenting research on a wetland topic are eligible; membership in SWS is not required. Please check the appropriate box on the ASB registration form and submit the abstract as instructed in the ASB call for papers. Further, applicants must also submit their abstract, by electronic mail, to **Mary M. Davis at mdavis@tnc.org, at the same time the abstract is submitted to ASB.** Award winners will be invited to the Chapter's luncheon meeting (no charge for awardees) held during the ASB annual meeting. Dr. Davis's address: The Nature Conservancy, 1330 West Peachtree Street, Suite 410, Atlanta, GA 30309; (404) 253-7217; Fax (404) 873-6984.

**BOTANICAL SOCIETY OF AMERICA
SOUTHEASTERN SECTION STUDENT AWARD**

Award: A \$100 cash prize for the best paper in plant science presented at the annual meeting of ASB as well as \$300 toward expenses to participate in the annual meeting of the BSA and one year's paid membership in BSA.

Who is eligible: Undergraduate and graduate students are eligible. The student must be the sole or senior author of the paper. Any topic in plant science, broadly defined, can be considered.

How to apply: To be included in the competition, applicants should e-mail their abstract to the Botanical Society of America Southeastern Section Student Award committee chair *at the time of registration*. The winner will be announced at the ASB Banquet.

Committee Chair: Dr. Lytton John Musselman, Department of Biological Sciences, Old Dominion University, Norfolk, VA 23529-0266; (757) 683-3595; Fax (757) 683-5283; cell (757) 434-0982; lmusselm@odu.edu.

SOUTHEASTERN FISHES COUNCIL STUDENT TRAVEL AWARDS (\$100)

The SE Division will meet with ASIH in New Orleans in 2006. For information, access the ASIH web site at <http://www.asih.org>. Click on related societies and other links.

QR



ASB Enrichment Fund Awardee Mandy Tinsley (center) with mentor professor Terry Richardson (to her left) and Claudia L. Jolls (to her right). Dwayne A. Wise is at the far left.

Honor Thy Teacher!

ASB MERITORIOUS TEACHING AWARD

DEADLINE JANUARY 17, 2006

Each year the Association of Southeastern Biologists recognizes one of its members for especially meritorious teaching. Carolina Biological Supply Company, Burlington, North Carolina, generously sponsors this \$1500 award, which will be presented together with a plaque and appropriate citation at the Annual Banquet in Gatlinburg, Tennessee, in April 2006.

The Meritorious Teaching Award Committee may each year select for the award a member of the association who has taught biology for at least ten years in any college or university represented in the association. There is no restriction on the size of the institution, nor must the institution have a graduate program. The award simply recognizes highly effective teaching. There are many deserving teachers in ASB. However, they cannot nominate themselves, so former students or colleagues must take an active role in assembling the materials that the committee will then evaluate.

Take the lead, pass the word – serve as the coordinator and nominate a deserving teacher! Solicit supporting letters from the nominee's present and former students. Contact his or her colleagues for additional endorsements. Document any form of recognition by the nominee's home institution of excellence in teaching, as well as special assignments and mentoring roles facilitating good teaching. Of special note would be the number and quality of students for whom the nominee provided primary inspiration to continue their study of biology, especially for students who subsequently earned advanced degrees. In short, document the educational impact this individual has made by virtue of his or her role as a biology professor.

Nominators should prepare a portfolio containing at least a letter of nomination, the nominee's current *curriculum vitae*, and supporting letters, together with the Nomination Form for the Meritorious Teaching Award and other relevant documentation. Submit all materials in triplicate by the January 17 deadline to: Dr. Patricia B. Cox, TVA Heritage Program, 400 W. Summit Hill Drive, WT11C 407K, Knoxville, TN 37901; (865) 632-3609; pbcox@tva.gov. If you have any questions, please call me or send an e-mail. Files for previously nominated candidates who did not receive the award will remain active for two additional years, and these files may be updated. The committee would welcome the task of deciding among several candidates.

Thanks for taking the initiative to nominate your favorite teacher!

Dr. Patricia B. Cox, Chair
ASB Meritorious Teaching Award Committee

NOMINATION-ASB MERITORIOUS TEACHING AWARD, 2006

NAME:

ADDRESS:

TEACHING INTEREST:

NOMINATOR NAME/ADDRESS:

SUPPORTING DOCUMENTATION: Letter of nomination

(enclosed, in triplicate) Supporting letters

Curriculum Vitae Additional Information (list)



ASB ENRICHMENT FUND AWARD

ASB maintains an enrichment fund to support long- and short-range objectives to advance biological education through teaching and research. The Enrichment Fund Board is chaired by Kim Marie Tolson. As has been the custom for the past several meetings, ASB recognizes individuals for their achievements and dedication to biology education at the secondary school level. The awardee is invited to attend the annual meeting and be honored. Expenses for attendance at the meeting are defrayed by the Enrichment Fund. The use of money from this fund shows appreciation for excellence in teaching at the secondary level, and to reach out to our colleagues in the teaching profession. Contributions to the fund can be made at the annual meeting or can be sent to the Treasurer of ASB whose address can be found in the inside front cover of this issue.

A LETTER FROM THE TREASURER

Dear ASB Member:

As you know, ASB strives to serve the educational and scientific community in many ways. These endeavors also serve the world community.

ASB encourages the advancement of biology by

- The promotion of research in biology
- The increase and diffusion of knowledge of biology
- The application of biology to the solution of biological problems
- The preservation of biological resources
- Its meetings, reports, discussions, and publications to promote scientific interests and inquiry

Website: <http://www.asb.appstate.edu>

PURPOSE

The Association of Southeastern Biologists was established in 1937 by biologists concerned with the quality of biological research in the southeastern United States. Today, ASB is the largest regional biology association in the country, and is committed to the advancement of biology as a science by the promotion of science education, research, and the application of scientific knowledge to human problems.

WHO WE ARE

ASB members include faculty, students, researchers, conservation workers, military and government personnel, and business people with a common interest in biological issues in the southeastern United States. Interests are diverse, but range from genetics and molecular biology, to physiology and population ecology, to community and ecosystem ecology.

PATRONS

Associated Microscope Inc, Elon College and Haw River, NC
Tim Atkinson, Burlington, NC
Breedlove, Dennis & Associates, Winter Park, FL
Carolina Biological Supply Company, Burlington, NC
Martin Microscope Company, Easley, SC
Thomson Learning Brooks/Cole Publishing, Belmont, CA
Marilyn Pendley, West Iredell High School, Statesville, NC

AFFILIATE SOCIETIES

American Society of Ichthyologists and Herpetologists, Southeastern Division
Beta Beta Beta, Southeastern Districts I and II
Botanical Society of America, Southeastern Division
Ecological Society of America, Southeastern Chapter
Society of Wetland Scientists, South Atlantic Chapter
Southeastern Fishes Council
Southeastern Society of Parasitologists
Southern Appalachian Botanical Society
Society of Herbarium Curators

AWARDS PRESENTED BY THE ASSOCIATION

The Association and its affiliates present a number of awards at the annual meeting. These include several for outstanding research, plus service awards.

ASB Awards

Meritorious Teaching Award – presented in recognition of outstanding teaching and mentoring of students. This is the association's most prestigious award. Sponsored by Carolina Biological Supply Company, Burlington, NC.

Student Research Award – presented to a student member for outstanding research. A written manuscript is required as well as an oral presentation at the annual meeting. Sponsored by the Martin Microscopy Company, Easley, SC.

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Research Award in Microbiology – presented to a member for outstanding research in Microbiology. Sponsored by Thomson Learning Brooks/Cole Publishing Company, Belmont, CA.

Affiliate Awards

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Eugene P. Odum Award – sponsored by the Southeastern Chapter of the Ecological Society of America. Presented to a student member for the most outstanding paper presentation in the field of ecological research.

Elsie Quarterman-Catherine Keever Award – sponsored by the Southeastern Chapter of the Ecological Society of America. Presented to a student member for the most outstanding poster presentation in the field of ecological research.

Ichthyology and Herpetology Awards – sponsored by the Southeastern Division of the American Society of Ichthyologists and Herpetologists. Presented to a student member for outstanding research in each of the two categories.

Elizabeth Ann Bartholomew Award – sponsored by the Southern Appalachian Botanical Society. Presented to individuals who have distinguished themselves in professional and public service that advances our knowledge and appreciation of the world of plants.

Richard and Minnie Windler Award – sponsored by the Southern Appalachian Botanical Society. Presented annually to the author or authors of the best systematic botany paper published in *Castanea* during the previous year.

Student Award in Plant Science – sponsored by the Southeastern Section of the Botanical Society of America. Presented to a student for the most outstanding paper presentation in plant science.

Byrd Award – sponsored by the Southeastern Society of Parasitologists. Presented to a member for outstanding research in the field of parasitology.

ANNUAL MEETING

Annual meetings are hosted by member institutions throughout the southeast. Meetings are in April, and include a distinguished plenary speaker, special symposia, field trips, oral and poster presentations of research, workshops, social events, exhibits, election of officers, and award presentations.

MEMBERSHIP

The Association of Southeastern Biologists currently has about 1400 members, spread among 220 academic and 60 non-academic institutions.

ACTIVITIES

The Association publishes a quarterly bulletin, *Southeastern Biology*, which contains the program of the annual meeting and abstracts of papers presented, book reviews, science news and information about scientists in the southeast, Association affairs, and special features of regional or timely interest.



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- ♦ A quarterly peer-reviewed and edited interdisciplinary scientific journal with a regional focus on the southeastern United States (ISSN #1528-7092).
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- ♦ Focusing on field ecology, biology, behavior, biogeography, taxonomy, evolution, anatomy, physiology, geology, and related fields. Manuscripts on genetics, molecular biology, archaeology, anthropology, etc., are welcome, especially if they provide natural history insights that are of interest to field scientists. Symposium proceedings are occasionally published.
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Southeastern Naturalist

Volume 4

2005

Number 1



Southeastern Naturalist

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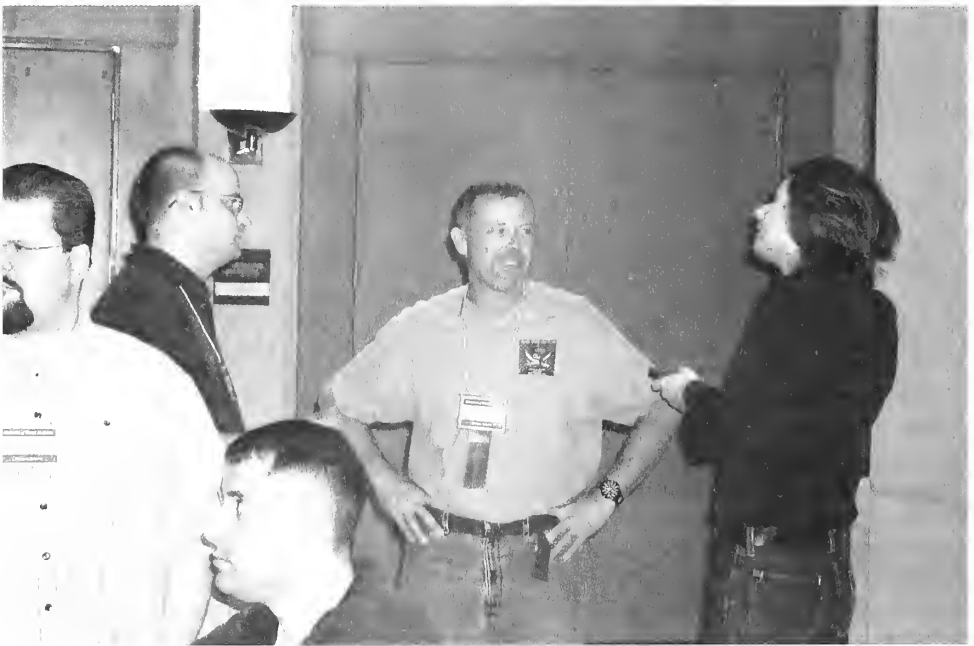
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Classified Ads for Northeastern and Southeastern Naturalist

Classified ads offering opportunities for people with career interests in the natural history sciences may now be placed in the *Southeastern* and/or *Northeastern Naturalists*, within the following categories.

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Ads need to be received by February 20, May 20, August 20, and November 20, and must be placed over the web at <http://eaglehill.us/Merchant2/merchant.mv>. Journal issues mail about one month later. Rates are a modest \$.03/character, with a \$5 minimum. Space allocated to classified ads within the journal is limited. Ads will be reviewed prior to acceptance. 



ASB Secretary and Local Arrangements Chair, Terry D. Richardson (center) taking a well-deserved break.

REVIEWS

Debbie Moore, *Review Editor*
 Department of Natural Sciences
 P. O. Box 8368, Troy State University
 Dothan, AL 36304-8368

Pilkey, O. H., T. M. Rice, and W. J. Neal. 2004. **How to Read a North Carolina Beach.** The University of North Carolina Press. Chapel Hill, NC. 162 pp. \$12.95.

Stand along any ocean water's edge, blink your eyes, and you may witness the formation of a beach or barrier island; blink again and all may vanish as the next wave washes up and down the beach. *How to Read a North Carolina Beach* is an easy-to-read 6 x 8" book, as the authors lead you by the hand in seven chapters that treat (1) The big picture: understanding wind, waves, and sand; (2) What makes and shapes a North Carolina beach; (3) North Carolina dunes; (4) Barrier islands: the platforms for beaches; (5) Beach clues: reading the signs on the beach; (6) Life signs: beach critters, past and present; and (7) Conservation of beaches. Many questions one may ask about beaches are answered, while many more are left to be answered another day. We learn barrier islands are "long bodies of unconsolidated sand, separated from the mainland by a lagoon and from other islands by inlets at each end." Barrier islands are "found on all continents except Antarctica and total approximately 2,500 islands worldwide (p. 55), 18 of which, coastal plain types, occur in North Carolina. Five components define a barrier island: the island, inlets, tidal deltas, shoreface, and beach (p. 56-57). All depend on "winds, waves, and a supply of sand. Island migrations depend on: open ocean shoreline retreat, lagoonside widening of the island by overwash on the sound shoreline, and elevation of the central part of the island by overwash" (p. 70).

Beach terminology (p. 115-151), Suggested readings (p. 153-157), and an index (p. 159-162) round out the volume. Eight color plates are wedged between pages 52 and 53. We are not told where the cover scene was taken. Most disturbing is the overuse of prepositions to begin a sentence, rendering them a non-sentence, and the use of due to (bad English). Other aspects are North Carolina has a large population of sharks (not as on p. 118). Shark teeth can be found abundantly on Shackleford and Bogue Banks, not just off Topsail beaches. Loggerhead sea turtle nests number about 390/year, not 1000 (p. 118). Most loggerhead hatching is complete by 15 October, not November. Why not alert the readers that there are 21 color shelled forms (a function of chemicals in the sand) of the Coquina *Donax* (that may be more than species along Bogue Banks).

We are left with a better realization of the equilibrium dynamics of winds, ocean, waves and sand and of barrier island creation and evolution. Do we want to continue changing these dynamics by altering dunes by overbuilding on them, bulldozing or replenishing the beaches in vain? We are the enemy of barrier island existence—let's change our ways to enjoy and preserve them before it's too late.

FRANK J. SCHWARTZ, *Institute of Marine Science, University of North Carolina, Morehead City, NC 28557-3209.*

C. Kenneth Dodd, Jr. 2004. **The Amphibians of Great Smoky Mountains National Park.** The University of Tennessee Press, Knoxville, TN. xvii + 283 pages. \$24.95

In terms of genre, *The Amphibians of Great Smoky Mountains National Park* is neither fish nor fowl, which turns out well because the book is about amphibians. The words "guide" or "field guide" are not present in the title, and I suspect there is good reason for the omission. While the preponderance of pages (167) deal with species accounts, the first third of the book contains a considerable treatment of the Great Smoky Mountains as an ecological setting that has changed through time. The evolution of the landscape and associated life forms (flora and fauna) are dealt with in some detail, considering the book is primarily for lay readers. Likewise, human history and effects on the landscape are considered, with care taken to point out that the present day park cannot be considered pristine by any means. The result is a book that is not just a field guide, clearly not a regional systematic treatment of amphibians, but an interesting combination of both forms. While the author's hybrid approach to the material has caused a few, minor problems (more about that later), I feel the benefits far outweigh the costs. In all, I found the book enjoyable and informative, and it should be a useful resource for park visitors, amateur herpetologists and professional herpetologists alike.

The book contains much technical information, but is written in a conversational style. Personal comments and recounts of events enliven species descriptions and life history information. The author interjects history into the discussion whenever possible, which adds interest and value to the introductory material and some species accounts. Tables are used to great effect in the introductory sections, and are generally well constructed and helpful. Line drawings of larval mouthparts are present for each frog species description. This is an excellent example of the author's use of material more commonly found in technical publications to aid the lay observer in species identification. Park range maps are presented for each species and are especially helpful in showing altitudinal constraints to distribution. Black and white plates are used to great effect in the historical sections of the introductory material. Excellent color plates are abundant in the species descriptions and often portray several life-cycle stages.

The book is organized into two sections entitled *Amphibians and the Environment in the Great Smoky Mountains National Park*, and *Accounts of Species*. The former contains a wealth of introductory material considering the length of the book. The reader is familiarized with scientific and common names, the taxonomic hierarchy, important amphibian taxa, the amphibian body plan and life history, and amphibian diversity on global, regional and local scales. A discussion of the physical setting includes historical geology, continental drift, historical and present physiography, historical and present-day climates, and a cross-referencing of long-term geologic change to amphibian evolution. Historic and present-day plant communities are discussed and related to recent changes in climate with inferences concerning effects on amphibian distributions within the park. A section on human history documents settlement of the area, effects of agriculture, mining and logging, and a brief history of biological research in the park, with particular emphasis on amphibians. The introduction of exotic pests

and their effects are discussed briefly, and are balanced with an equally short discussion of conservation.

The species accounts make up the bulk of the book, and are well done. Forty-four species are presented. A typical account contains the following sections: scientific name, etymology of scientific name, identification, distribution, life history, abundance and status, remarks. Account specific figures/plates include: Park range map (dot format), one or more color plates of adults, color plate or drawing of larval forms (for bi-phasic species) and a black and white line drawing of larval mouth parts (frogs only). Additional plates indicating unusual features are presented as necessary.

The author goes out of his way to credit collaborators in the acknowledgements, and indeed throughout the entire volume. The reader quickly realizes that the effort required to produce this book was substantial. I suspect that the data generated will result in quite a few papers in the primary literature over the ensuing years. I am confident that a survey of this size (over 500 sampling sites within the park) will not be mounted again soon.

The book has a couple of characteristics that I found bothersome. Unfortunately, not all of these characteristics are within the author's control. The author uses a lot of localized place and trail names specific to the park throughout the book. However, no master map is present to aid the reader with these localities, only range maps are presented. All readers unfamiliar with the park would be greatly aided by such a map. There are some typographical/editing errors: the discussion of ambystomatid skin glands, page 20; the phrase "reddish dorsal red stripe," page 115; and others. An identification key would have been a useful addition. The etymology sections, while interesting and helpful, can become redundant and tiresome if species accounts are read in sequence.

One of the strong points of the book is the author's attempt to provide a scientific context to the accounts presented by means of an introductory section that I consider long for a book of this type. However, in an attempt to keep the scientific information comprehensible to the general public, some oversimplifications occur, or important aspects of specific research projects are glossed over. This is understandable and troubling at the same time. The discussion of evolutionary loss of lungs in plethodontids is sure to make a few individuals grumble. Hairston's important work on salamander competition is presented, but the fact that the work required controversial transplants of salamanders is omitted. Nishikawa's findings of territoriality are certainly debatable. Discussions of management do not accurately reflect the diversity of opinion present in the scientific community.

Perhaps most importantly, the herpetological community is currently reconsidering the systematics of amphibians in general, and plethodontid salamanders in particular. To say that taxonomy and nomenclature are in a state of flux would be an understatement. New species, defined primarily by molecular systematic techniques, have been described at a rapid pace in the last decade. This process is obviously beyond the control of the author, but is the one factor most likely to date the book quickly.

Despite the minor quibbles mentioned above, this book is a good one that will stand the reader in good stead. It is well worth the purchase price, and will add little weight to your backpack.

ANDREW N. ASH, *Department of Biology, UNC Pembroke, Pembroke NC 28372-1510.*



Hill, R. W., G. A. Wyse, and M. Anderson. 2004. **Animal Physiology**. Sinauer Associates, Inc., Publishers. Hardback. 770 pages + appendices.

I can remember the standard animal physiology text (herein referred to as, "the text") touted by all of my graduate professors and advisors: *Eckert and Randall's Animal Physiology: Mechanisms and Adaptations*, 1988. For nearly 20 years I have seen the text used by both upper-level undergraduate and graduate courses at various universities. Within the next five years or so, several authors have attempted to improve on the text (e.g., *Animal Physiology: Form and Function* by Schmidt-Nielsen, 1977; *Environmental Physiology of Animals* by Willmer et al., 2004, to name a few). Even Randall has moved on to author a newer version of the original text with Eckert as editor while taking on two new co-authors (Burggess and French). Although Randall et al.'s newer version has changed, it or the original text is still a worthy resource in today's physiology classroom.

Authors Hill, Wyse, and Anderson, have recently attempted to incorporate the vast body of physiological information, so well presented in Eckert and Randall's text, and present it, along with more recent findings, in a meaningful, contemporary version. The authors state in their preface that their goals were to "articulate the central paradigms of contemporary animal physiology," "provide our readers with a resource where they will find accurate information about physiological systems and lucid explanations of physiological concepts," and "draw attention to cutting edges, the places where the onward progress of research is challenging old paradigms." A formidable set of tasks, I can clearly see where "lucid" was one of their major emphases.

Overall, the Hill text is organized into six sections: (1) Fundamentals, (2) Food, Energy, and Temperature, (3) Integrating Systems, (4) Muscle and Movement, (5) Oxygen, Carbon Dioxide, and Internal Transport, and (6) Water, Salts, and Excretion. The subjects covered are well laid out in the contents section which provides easy reference to the reader. Although the topics covered are typical to most animal physiology texts, the layout of the information is well thought out and, again, should be easy to follow by most students at any collegiate learning level. Improvements in visual aids over recent years have been a trend for most biology texts and the diagrams and figures incorporated into the Hill text are very informative. The book is overall very appealing to the eye and should increase the chances that students actually "break the cover" (remember the visual learner). In fact, as you turn each page of the text, you are greeted by mostly visual aids (i.e., graphs, figures) explaining a physiological topic. I found the visual aids to be one of the high points to this text.

Another bonus for the instructor is the availability of a resource CD that has both PowerPoint presentations for the various chapter topics as well as all the

tables and figures that are listed in the text. In the past, I have personally been tentative about using the “canned” PowerPoint presentations offered with a text and have opted to either revise or use the visual aids that I had prepared myself. The resources offered with the Hill text, however, are quite good and, again, should be of value to most instructors.

This past spring was the first opportunity I had to use the Hill text in a classroom setting. Overall, in the opinion of my students, the text was a hit. Most commented on the layout and use of visual aids. They particularly liked the layout when I let them see the textbook I used for physiology as a student. I know reading was one of my less studious activities when I was an undergraduate and I was excited to see students actually interested in using a text. In my opinion, the Hill text works because it attracts the visual learner, which is what most of the newer science texts are doing. And most of us would agree, particularly undergraduates, a picture is worth a thousand words.

MARK MEADE, *Biology Department, Jacksonville State University, AL 36265.*



Earley, Lawrence S. 2004. **Looking for Longleaf: The Fall and Rise of an American Forest.** The University of North Carolina Press, Chapel Hill, NC. \$27.50. 322 pages.

As a long-time subscriber to *Wildlife in North Carolina* and a fan of writer Lawrence Earley, I looked forward to reviewing Earley's *Looking for Longleaf: The Fall and Rise of an American Forest*. Readers will not be disappointed in this chronicle, ten years in the making. Earley knows his way around words and the business of conveying information in a familiar and artistic style.

The book (322 pages) is divided into four parts (Ecology, Exploitation, Forest Management, and Ecosystem Restoration) and fourteen chapters. Earley begins by painting a striking picture of a vast longleaf pine ecosystem encountered by early Europeans exploring the Southeastern Coastal Plain. After reflecting on the geologic origins and fire ecology of the ecosystem, he describes the systematic use and exploitation of longleaf pine (*Pinus palustris*), devoting much discussion to the naval stores industry. Earley describes, with painstaking precision, further assaults (e.g., logging and fire suppression) that decimated the longleaf ecosystem. Changing attitudes along with new laws (e.g., the Endangered Species Act) and successful efforts to regenerate longleaf pine have pushed restoration efforts into the forefront in recent years. Subdued and realistic, Earley's epilogue (pages 267-272) offers hope that restoration is achievable.

Earley has exhaustively researched his subject, visiting a host of longleaf sites, and relying extensively on excerpts from the literature plus first hand accounts of ecologists, wildlife biologists, foresters, land managers, landowners, and lumbermen. The title of each chapter is followed by a quote, generally taken from the literature. He masterfully weaves his own words around excerpts from other writers, and he has a knack for explaining complex ecological relationships in ways that should win the approval of ecologists and be readily grasped by the lay public. Readers won't find an exhaustive account of the rare plants and animals associated with longleaf pine. Instead, discussion is given to a few key organisms.

Reference notes (pages 273-288) list the sources cited in every chapter. The bibliography (pages 289-312) has an extensive collection of papers on most topics except recent threats such as pine straw raking. The bibliography will make a nice addition to personal reference libraries, especially as it draws from such diverse topics as geology, climate, and early American culture. The index (pages 313-322) is nicely done, but unfortunately it lists only common names of species.

The illustrations (34 plus one map), all in black-and-white, consist mostly of photographs plus a few hand drawings (pages 109-130). Given the lengthy discussion of the southeastern fox squirrel (*Sciurus niger*) (pages 59-62), a photograph would have been nice. Further, many of the photographs are nearly full-page length (~ 6 X 9"), but an engraving of the colony of Savannah, Georgia (page 109), is not. A full-page format would have been better as details are scarcely visible in the small space allocated. A map of longleaf pine's current distribution (not shown) could offer a striking contrast next to the map showing its historic distribution (page 109).

Editorial mistakes are rare, but minor problems crop up in Chapters 3 and 4. Dwarf post oak should be cited as *Quercus margarettiae*, not *Quercus stellata* (page 35) (Schafale and Weakley 1990, Kartesz 1999). It is true that mycorrhizal fungi and tree roots form a "symbiotic association" (page 61), but "mutualistic association" is more precise. A lengthy discussion is given the unusual trait of red-cockaded woodpeckers (*Picoides borealis*) excavating their nest cavities in live pines (pages 54-59), but no mention is given the management practice of creating artificial nest cavities.

As a friend of mine noted, this is a "fascinating" book and well worth the time it takes to read. Don't skip the prologue as it is beautifully done and provides a concise overview of a book that is sometimes a bit daunting for its rich detail. This book should be on reading lists for graduate and undergraduate courses in conservation biology, and it should be read, not only by people interested in longleaf pine, but by anyone interested in the plight of endangered species, vanishing wilderness, or the history of the South.

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LISA KELLY, UNC-Pembroke, Department of Biology, Pembroke, North Carolina 28372-1510.

NEWS OF BIOLOGY IN THE SOUTHEAST

Leon Jernigan—News Editor
Department of Biology
University of North Carolina
Pembroke, NC 28372-1510

ABOUT PEOPLE AND PLACES

ALABAMA

After officially organizing on July 4, 2004, The Society of Herbarium Curators (SHC) held its first meeting in Florence, Alabama, on Friday, April 15, 2005. The SHC is recognized as an affiliate society by both the Association of Southeastern Biologists and the Southern Appalachian Botanical Society and will meet each spring at the ASB Annual Meeting. Although the SHC is an International Organization, the majority of the membership is composed of curators from the southeastern United States. The SHC is not only for curators but for any individual (faculty, student or general public) interested in plants and collections. The SHC has several projects in which they will be involved in the coming years. At present, the primary project is a joint effort between the SHC and several other groups in the southeast. This project deals with the establishment of the SouthEast Regional Network of Expertise and Collections (SERNEC). The goals of SERNEC include 1) network the 150 herbaria in 14 states in the Southeast of North America, 2) move each state's ongoing databasing effort forward, and 3) make botanical resource WWW sites of compiled information available to scientists, land managers, state and federal agencies, K-12, and the general public.

For more information about The Society of Herbarium Curators visit our web site at <http://www.newberry.net.com/sabs/SHC/index.htm>. Please contact any officer listed on the web site for additional information. Also, please print a copy of the membership application provided on the web site and consider becoming a member of this exciting new organization, The Society of Herbarium Curators.

TENNESSEE

Dr. Nitin Jain of the Biochemistry Cellular and Molecular Biology Department at the University of Tennessee, Knoxville, has recently been awarded a five-year grant totaling \$1,450,000 from the National Institute of Health for his research on the molecular mechanisms of sepsis and septic shock. Sepsis is a major clinical condition found typically in hospitals and responsible for more than a million deaths annually worldwide. Using structural biology and other biochemical techniques, Dr. Jain's group will investigate recognition of bacterial endotoxins by certain pattern recognition receptors in the human body. Cutting-edge research by his group into understanding the molecular basis for endotoxin pattern recognition and initiation of sepsis is likely to have a profound impact on design of novel therapeutic strategies for treatment of sepsis.

Deadlines for the submission of "news."

January issue: October 28.

September issue: July 13.

April issue: January 13.

December issue will not contain "news."

OBITUARY

WILBUR H. DUNCAN, 1910-2005

We are saddened to report the passing of Wilbur H. Duncan, University of Georgia Professor Emeritus of Botany and retired Curator of the GA Herbarium. He died at his home attended by his family on 25 March 2005 in Athens, Georgia. He was over 94 years old.

Wilbur was born on October 15, 1910, in Buffalo, New York and received a A.B. (1932) and M.A. (Botany, 1933) from Indiana University. After earning a Ph.D. from Duke University under forest ecologist Clarence F. Korstian in 1938, he began his distinguished 40-year career at the University of Georgia, Department of Botany (now Department of Plant Biology) as faculty member and curator of the GA Herbarium. His work at the university was interrupted by three years of service in the U. S. Public Health Service (1943-1946) during World War II.

Wilbur had an illustrious career in botany and conservation spanning seven decades. He collected over 30,000 plant specimens in his lifetime (typically in multiple sets) that he deposited at GA and other herbaria throughout the southeastern United States. During his curationship of GA Herbarium, the collection grew from 16,000 to 135,000 specimens. Wilbur authored 65 articles in scientific journals, mainly on the floristics of the southeast (e.g., Duncan 1954a, 1964, 1967, 1969, 1977; Duncan and Pullen 1962; Duncan et al. 1955, 1957), particularly of Georgia (Duncan 1940, 1950a, 1954b, 1960, 1962a, 1966, 1971, 1979, 1984; Duncan and Kartesz 1981), including nomenclature (e.g., Duncan 1950b), descriptions of new taxa (Duncan 1940, 1944, 1950c) and aspects of morphology (e.g., Duncan 1933, 1950d, 1959a; Duncan and Brown 1954) and natural history (e.g., Duncan 1959b, 1962b; Duncan and DeJong 1964) of these species.

Wilbur also published three plant identification books during his tenure as faculty member (Duncan 1941, 1975; Duncan and Foote 1975). He is probably best known, however, for his popular field guides produced after his "retirement:" *The Smithsonian Guide to Seaside Plants of the Gulf and Atlantic Coasts* (Duncan and Duncan 1987), *Trees of the Southeastern United States* (Duncan and Duncan 1988), and *Wildflowers of the Eastern United States* (Duncan and Duncan 1999). At the time of his death, he was completing a manuscript for *Shrubs of the Southeastern United States*, a significant guide including 700 color photographs.

Wilbur belonged to 18 professional societies and associations. He was a charter member of the Association of Southeast Biologists and a Fellow of the American Association for the Advancement of Science, and he held several offices with the Botanical Society of America, was President of the Georgia Academy of Science (two terms), and served as Council Member of the American Society of Plant Taxonomists (four years). He was awarded the 1990 Elizabeth Ann Bartholomew Service Award by the Southern Appalachian Botanical Club (Martin 1990); in 1998, the Department of Plant Biology,

University of Georgia, initiated the Wilbur Duncan Teaching Award in his honor to recognize outstanding graduate students in the department.

In his retirement Wilbur continued to be a botanical resource for the GA Herbarium. When students had difficulties identifying a plant, they would finally consult Wilbur—who would absentmindedly rattle off a plant name that inevitably was correct, much to the amazement of the students. The faculty and staff of our department were impressed to observe Wilbur here at work five days a week (and often also on the weekends), sitting upright at his microscope in “his corner” or editing portions of his latest book manuscript(s). When most older faculty were looking forward to retirement as a time of rest and passage to other areas of interest, Wilbur had already begun his second botanical career resulting in his well-written popular field guides, beautifully illustrated with his own photographs. His books brought botany to the public at an understandable level. These guides are coauthored by his wife of 64 years, Marion Duncan, also a professional botanist. The Duncans logged over 80,000 miles together compiling these field books.

Always busy in the herbarium and nattily dressed in coat and bow tie, Wilbur was an enviable model of a true botanist devoted to his craft. As age and health issues encroached on his schedule, he willed himself to continue until his shrub book was completed, a testament to his strength of character. And the latter, he admitted, was due to the unequivocal support of his loving wife, Marion, who was his best friend, field partner and confidant. He was unstinting in his praise and respect for Marion as the steady fulcrum of his life and also never failed to proudly mention his children and grandchildren. It is often said of certain people that we shall not see their like again, and while perhaps a cliché in today's world, the statement holds a high timbre for the life of Wilbur H. Duncan.

Wilbur Duncan is survived by Marion, his wife; three children (Mack, Lucia, Douglas); four grandchildren (Laramie, Amber, Laura, and Ross Duncan). To honor him, the family has requested donations to the Wilbur and Marion Duncan Publishing Fund, a charitable trust established with the University of Georgia Foundation to ensure the publication of the Duncans' last manuscript, *Shrubs of the Southeastern United States*. Those wishing to participate may send tax-deductible contributions to: The University of Georgia Foundation, Wilbur and Marion Duncan Publishing Fund, 394 S. Milledge Avenue, Suite 100, Athens, GA 30602-5582.

—Wendy B. Zomlefer and David E. Giannasi, Department of Plant Biology, University of Georgia, 2502 Plant Sciences, Athens, GA 30602-7271. email address: wendyz@plantbio.uga.edu.

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**Published in the Athens Banner-Herald
from 3/27/2005 - 3/30/2005.
Duncan, Wilbur H.**

Athens - Wilbur H. Duncan, 94, of Athens, UGA Professor Emeritus of Botany and retired Curator of the Herbarium, died at home with his family on March 25, 2005. Dr. Duncan is survived by Marion, his wife of 64 years; three children and a daughter-in-law, Mack and Julie, Lucia, and Douglas Duncan; four grandchildren, Laramie, Amber, Laura, and Ross Duncan; a brother and sister-in-law, Frank and Barbara Duncan; a brother-in-law, James Melton; and four nieces and four nephews.

Wilbur Duncan was born on October 15, 1910, in Buffalo, NY. The family returned to Monroe County, IN, where Wilbur attended Bloomington High School, then acquired Bachelor's and Master's degrees from Indiana University in 1932 and 1933, respectively. While working on his Ph.D. at Duke University in Durham, NC, he served as a summer naturalist in Indiana, and also worked in the Smoky Mountains.

After earning his Ph.D. in Botany from Duke in 1938, Dr. Duncan began a distinguished 40-year teaching and research career at the University of Georgia. In 1941, he married Marion Bennett, originally of Jesup, GA, who earned her Master's degree in Botany at UGA. They were able to stay together through several Public Health Service assignments during World War II. At the end of the war, he left the Service with the rank of Major, returning to UGA where he resumed not only his teaching and research, but also his direction and enlargement of the Herbarium. This was a major role he assumed on his own time in 1939 and continued until he retired in 1978 with Emeritus status.

Notable honors and accomplishments include the Wilbur Duncan Award, initiated in 1998 and granted on merit only to the Outstanding Graduate Student in the UGA Botany Department; the 1990 Elizabeth Ann Bartholomew Service Award presented by the Southern Appalachian Botanical Club; and the 1975 publication of one of UGA Press' best selling books, *Wildflowers of the Southeastern United States*.

Dr. Duncan belonged to 18 professional Societies and Associations. He was accepted to membership in Sigma Xi in 1947, and designated an Emeritus Life Member of Phi Kappa Phi in 1977. He was a charter member of the Association of Southeast Biologists and a Fellow of the American Association for the Advancement of Science, held several offices with the Botanical Society of

America, and was twice elected President of the Georgia Academy of Science. During one such presidency, he engineered the permanent holding of the State Science Fair at the University of Georgia. Other organizations in which Dr. Duncan was especially active include the American Society of Plant Taxonomists, serving four years as a member of the council; the American Institute of Biological Sciences; the International Association of Plant Taxonomists; and the Georgia Botanical Society.

Retirement was a time of great activity and enjoyment for Dr. Duncan and his family. He and his wife Marion, also a professional botanist, co-authored many publications, including three major botany field guides: *Seaside Plants of the Gulf and Atlantic Coasts* (Smithsonian Institution Press), *Trees of the Southeastern United States* (UGA Press, 1988), and *Wildflowers of the Eastern United States* (UGA Press, 1999). All three books are still in print, and *Wildflowers* continues to be a best-seller. A fourth manuscript is in advance stages for publication (see last paragraph below). Dr. Duncan continually attributed his success to his professional and personal partnership with his wife. In a personal journal describing his long and illustrious career, he wrote: "Marion's botanical knowledge and her amazing ability in written and spoken English made possible the quality of books and papers we published."

Dr. Duncan's interests extended far beyond his Botany career. The love of nature, geography, history, music, and art that he and Mrs. Duncan enjoyed was shared continuously and enthusiastically with their children, Mack, Lucia, and Douglas, and later with their four grandchildren. He was an avid sports fan, although his participation was limited to ballroom and square dancing, and to horseshoes - he was the 1932 Indiana Intramural Champion. He especially enjoyed the world-class women's gymnastics and basketball at UGA, attending regularly with his wife after retirement.

Integrity and ethics in his personal and professional life were of paramount importance to Dr. Duncan. His personal code of honor was of a caliber some would describe as old-fashioned, but it transcended generations, and profoundly influenced his children and their choices in life. He was a true egalitarian, judging only by one's character. An example is his bold signature on the 1961 Faculty Petition in Support of Desegregation. People of all backgrounds and capabilities felt comfortable and welcome with him. Through his insightful and gentle coaching, students, colleagues, mechanics, carpenters, and countless others found a better way to use their talents and to enhance their lives. Many people hope to leave this world a better place than they found it. Wilbur Duncan achieved this goal in more ways than this small tribute can possibly express, and his family is immensely proud of how much of himself he gave to so many.

A memorial service will be held on April 9, 2005, at 2:00PM at the Unitarian-Universalist Fellowship of Athens, located at 780 Timothy Road. The family has requested that, in lieu of flowers, donations be made to the Wilbur and Marion Duncan Publishing Fund, a charitable trust established with the University of Georgia Foundation to ensure the publication of the Duncans' last manuscript, *Shrubs of the Southeastern United States*. It is a significant scholarly work of over 1700 pages and 700 color photographs, and a lasting tribute to a remarkable man. Those wishing to participate may send tax-deductible contributions to: The University of Georgia Foundation, Wilbur and Marion Duncan Publishing Fund, 394 S. Milledge Avenue, Suite 100, Athens, GA 30602-5582



Wilbur H. Duncan

Presentations at the Forty-Eighth Annual Meeting of the Southeastern Region of
Beta Beta Beta in Association with the Sixty-Sixth Annual Meeting of the
Association of Southeastern Biologists, Florence, Alabama
April 13-16, 2005

**ABSTRACTS
DISTRICT I
PAPER SESSION**

ALI, KARIM. Sigma Phi (SE I), Guilford College. *Effects of Soy extracts on the growth of Herceptin sensitive and resistant breast cancer cells under in vitro and in vivo conditions.*

Herceptin, an FDA approved drug, is an antibody that binds to the membrane antigen HER-2 that is over-expressed in breast cancer cells. Soy has been postulated to inhibit breast cancer proliferation and has been justified as a compound that lowers the breast cancer incidence rate in Asian countries. Herceptin has been shown to inhibit HER-2 kinase activity and Soy is known to be a broad-spectrum kinase inhibitor. Using BT-474 cells (an over expressing HER-2 cell line), our studies indicate that combination treatment of Herceptin with Soy extracts has a greater growth inhibition than either product alone. These studies were performed using tissue culture and flow cytometric procedures. We, therefore, propose that soy extracts might be able to enhance the Herceptin treatment of breast cancer.

BADEMAN, MARTHA ^{1,2}, A. H. HINES ¹, AND E. G. JOHNSON ¹, Beta Rho, Wake Forest University ¹ and Smithsonian Environmental Research Center ², Edgewater, MD. *Predation Rates on Hatchery-Reared and Wild Juvenile Blue-Crabs (*Callinectes sapidus*) in Upper Chesapeake Bay.*

Cannibalism is a major source of mortality for juvenile blue crabs. Long-term tethering experiments indicate that the impact of cannibalism has decreased as blue crab populations have declined >80% over the past 15 years. Juvenile mortality is important for stock enhancement, since hatchery-reared individuals may be more vulnerable to predation than wild conspecifics. We conducted laboratory and field tethering experiments to quantify mortality of juvenile hatchery-reared and wild blue crabs (20-35 mm) as a function of stocking density and site of release in nearshore shallow waters in Chesapeake Bay. In laboratory mesocosms, juveniles were tethered in the presence of predators to determine if predation in the field could be attributed to specific predators by the patterns of the remains. In the field, predation rates did not differ significantly between wild versus hatchery-reared crabs, nor by release density or site. We also used tethering to assess mortality versus emigration to explain density-dependent decreases in abundance to tagged cohorts of wild and hatchery-reared crabs. The results indicated that emigration rather than predation had a greater effect on subsequent abundance following release of juveniles. This finding suggests that current estimates of survival and production of hatchery-reared crabs in stocking experiments may be conservative.

BLOOM, SEAN. Tau Eta, Catawba College. Does successional stage affect macro-invertebrate community structure in piedmont forested wetlands?

In southeastern forested wetlands, macro-invertebrates have been understudied. Existing research shows that presence of decayed woody debris, certain forest types, and time since disturbance or creation in the short term all impact the community structure. The past research was sparked by an interest in macro-invertebrates for waterfowl and biological assessment. At the Catawba College Ecological Preserve there are three distinct areas which have been disturbed 20, 40, or over 100 years ago. In order to examine macro-invertebrate communities, the woody debris, leaf litter, and water column in each area were sampled. Shannon-Weiner Indices were calculated for each site and comparisons were made using a modified T-test. Chi-square analyses were conducted on four taxa which composed approximately 90 percent of all individuals: Chironomidae, Fingernail Clam, Oligochaeta, and Ceratopogonidae. The data show differences in community structure and proportion of certain taxa changing as successional stage advances. In addition, the data showed that seasonal variations do exist within sites. Based on this information, it is recommended that more work be done on macro-invertebrates to fully understand the mechanics of their community structure.

BRECKHEIMER, IAN. Sigma Phi, Guilford College. Habitat flexibility in the Tooth-billed Bowerbird (*Scenopoeetes dentirostris*): Implications for species survival in a changing climate.

The Tooth-billed Bowerbird (*Scenopoeetes dentirostris*) is endemic to rainforest uplands of North Queensland, Australia, and is potentially threatened by climate change. The degree of this threat depends on the species' flexibility when faced with changing habitat. During the breeding season, males clear a forest-floor display "court" and decorate it with upturned leaves, near which they vocalize to attract mates. Aspects of this male breeding effort (including calling time, court maintenance time, court leaf number, and leaf turnover) were used as indicators of habitat suitability for males in two habitats: regrowth forest (dominated by *Acacia spp.*) and mature rainforest. Calling time, court maintenance time, and court leaf number were statistically similar in the two habitats, while court leaf turnover was significantly greater in regrowth ($p < .05$). The trials give no evidence that breeding effort was adversely affected in regrowth compared to mature forest. This supports two conclusions: (i) that the species exhibits some habitat flexibility and (ii) factors other than resource availability may drive changes in the species' distribution in a warmer world.

GRUBBS, NATHANIEL. Sigma Zeta, Mount Olive College. The allelopathic effect of crushed *Juglans nigra* (black walnut) bark on the germination of tomato, radish and wheat seeds.

Plants growing together affect each other in various ways. Often, they vigorously compete for limited resources (nutrients, water and sunlight) necessary for healthy growth. However, it is being discovered that a number of plants produce chemicals toxic to other plants, which may provide increased chances for

competitive success. The production of these plant toxins is called allelopathy. Allelopathic plants may cause significant damage to ornamental plantings, gardens, and crops. Allelopathic chemicals are also being studied as environmentally friendly weed control. Black walnut, *Juglans nigra*, produces a chemical called juglone (5-hydroxy-alpha-naphthaquinone), which is harmful to a number of plants, especially tomatoes. This experiment seeks to establish the toxicity of black walnut bark by comparing the germination of radish, wheat, and tomato seeds to that of seeds exposed to black walnut bark.

****HERZER, KRISTI.** Sigma Phi, Guilford College. The Role of the *Pseudomonas aeruginosa* Aer Protein in Aerotaxis.

One process that some aerobic organisms use for survival in harsh conditions is aerotaxis, the ability to sense and respond to oxygen levels. It has been shown in *E. coli* that two proteins are involved in this process, Aer and Tsr. A homologue to the *aer* gene has been found in *P. aeruginosa*. In the absence of oxygen, mucoid, non-motile *P. aeruginosa* rapidly revert to a motile, non-mucoid phenotype. We hypothesized that reversion occurs in response to limited oxygen and that *P. aeruginosa* utilizes the Aer protein in aerotaxis. We performed static growth experiments using isogenic *aer+* and *aer-* mucoid, non-motile *P. aeruginosa* to study the response of the bacteria to low oxygen conditions. The reversal to a non-mucoid motile phenotype was assayed by examining the presence of a pellicle at the liquid-air interface and by plating aliquots of statically grown cells to determine their level of mucoidy. We found that the *aer-* strain did not form as thick of a pellicle as the wildtype strain and that the reversion from a mucoid, non-motile to a non-mucoid, motile phenotype occurred slower in the *aer-* than the *aer+* strain. These data show that the *aer* gene in *P. aeruginosa* is involved in aerotaxis.

HULM, KRISTEN. Sigma Psi, Florida Institute of Technology. Achieving high resolution carbon records of Limon Lake, Peru, using grey-scale image analysis.

Data-generating techniques in paleoecological studies typically rely on methods that disturb the original core despite the objective, noninvasive nature of digital image analysis. Image analysis is a developing technology, however, and widespread application has been restricted by the limited number of proxies developed, particularly for paleolimnological studies. This study aims to expand the use of grey-scale analysis by exploring its potential as a carbon proxy. Digital images of a 2,215-yr-long core from Limon Lake, Peru, were captured using Geotek Core Logger and converted to grey-scale (0-255) using Image J software. Samples were selected to reflect a range of these values and thus correlate grey-scale values and carbon content. A minimum of four samples were taken from nine grey-scale subcategories within the Limon core ($n = 77$). These data were then used to construct a model allowing carbon content to be inferred from color. This correlation demonstrates the usefulness of grey-scale as a high resolution carbon proxy and suggests that other digital color analyses may be used as proxy indicators.

KANAPECKAS, KIMBERLY L. Sigma Gamma, Erskine College. Pharmacotherapy of Hand-reared *Cervidae* Presenting with Scours.

Cervidae scours is due to pathogenic microorganisms infecting the gastrointestinal tract of young deer and elk. Fawns raised by the Colorado Division of Wildlife presented with diarrhea, mild dehydration and lethargy presumably due to stressors including transport, environment, and bacterial infection. *Escherichia coli*, *rotavirus*, and *coronavirus* were the most prevalent infectious agents in stools submitted to Colorado State University's Veterinary Diagnostic Laboratory. Sulfamethoxazole-trimethoprim (SMZ/TMP) was initially administered TID (3x/day) to fawns with scours. The consistency of the stools was noted after each feeding. If a particular fawn exhibited no improvement after several days, SMZ/TMP was discontinued and the fawn was put on Amforol suspension. If after several days the Amforol was not effective, it was discontinued and Endosorb suspension was administered to provide relief. In each case, treatment with the first effective antibiotic was carried to completion to prevent super-infection. Treatment was accompanied by Probios to replenish natural gut flora. In the majority of fawns treated, SMZ/TMP was found to be the most effective and safest antibiotic combination, followed by Amforol. The remaining chronic case was relieved with Endosorb. After finishing the course of effective antibiotic therapy, Probios was continued until feces were consistently pelleted and the fawns browsed regularly.

*MORGAN, RACHEL E. Sigma Gamma, Erskine College. Purification and Interactions of Multiprotein Complexes Containing Proteins with Known CK2 Motifs

To investigate the physiological role of Casein Kinase II (CK2), interactions between previously defined multiprotein complexes in *Saccharomyces cerevisiae* containing proteins known to possess CK2 sites and tagged cells known to purify Cka1 from these sites were observed *in vitro*. Two methods of protein purification were used to aid in this process. Tandem affinity purification (TAP) was used to purify protein complexes using Spt16, Ctr9, and Ckb2 as bait. Glutathione S-transferase (GST) tagging was used to purify and express fourteen specific proteins known to contain CK2 motifs. Ten of the fourteen GST-tagged proteins were successfully overexpressed. To confirm interaction of the GST-tagged proteins with CK2, a co-immunoprecipitation using myc-tagged Cka1 (the catalytic subunit of CK2) cell extracts was performed. As expected Cka1 was co-purified from the strains that successfully overproduced the desired proteins. However, Cka1 was also co-purified from samples which did not successfully produce the desired proteins suggesting that nonspecific interactions between the GST-beads and Cka1 occurred. A higher salt concentration may be necessary to produce results that agree with the induction pattern of the protein samples.

PAUGH, JACOB A. Sigma Zeta, Mount Olive College. A study of effects of Vitamin C on *Streptococcus pyogenes*.

The use of Vitamin C continues to be debated in health science. Most of this debate has been over the efficacy of Vitamin C as a treatment for the prevention

of and aid against the effects of a cold. The question has been whether Vitamin C is acting to destroy pathogenic bacteria or aid the body in defense. These questions were tested by examining the affects of Vitamin C on the growth rates of *Streptococcus pyogenes*. In this study, eight agar plates were inoculated with *Streptococcus pyogenes*. These eight plates were separated into four groups of two and assigned a particular Vitamin C concentration. Each of these plates had four nested treatments of sterile discs that had been soaked for three minutes in the concentration of Vitamin C given for the particular dish. The bacteria were then incubated at 37 degrees Celsius for forty-eight hours. At the end of the incubation period, the diameter of no growth around each disk was measured. Data from these tests were analyzed using ANOVA and t-tests.

***PICKLER, JENNIFER L. Tau Eta, Catawba College. Effects of food availability on heat-shock protein levels in Carolina Chickadees, *Poecile carolinensis*.

Many environmental factors, including predictability of food, can influence stress experienced by individuals. Heat-shock protein production can be induced by stress. I manipulated food available to two free-ranging flocks of Carolina Chickadees. One flock received food *ad libitum* and the other flock received a limited amount of food. I determined the effectiveness of the food manipulation by measuring feather growth rate. SDS-PAGE gel electrophoresis and a western blot were used to measure the heat-shock protein levels. There was no difference in feather growth rates of the two groups. However, I found a significant difference in the heat-shock protein expression between groups. Heat-shock protein expression was increased with a restricted diet. (This project was funded by Beta Beta Beta Research Scholarship Fund.)

ABSTRACTS DISTRICT II PAPER SESSION

ABBENE, MICHELE L. Eta Lambda, Loyola University New Orleans. A preliminary assessment of the pH status of Mill Pond, Long Island, New York.

In 2001, the USGS Water Resource Division implemented a water resource monitoring project on the South Fork of Long Island, New York. During routine monitoring in the of summer 2004 Mill Pond was observed to be unusually alkaline (> pH 9.0) relative to neighboring ponds. A preliminary study of the USGS database and observational field sampling was initiated to identify the origin of the alkaline water. Water quality samples were collected annually from 2001 to 2004 and analyzed for nutrients, wastewater compounds, pesticides, major ions, and trace elements. Temperature, pH, DO, specific conductance and transparency were measured in thirty-centimeter intervals to establish a vertical profile of the water column. Previous USGS analysis of storm water and ground water rejected explanations based upon most of the measured chemical parameters. This study investigated geology as well as the relationship between

increased photosynthesis and nutrients levels as the basis for the higher pH in Mill Pond. The geological explanation was rejected based upon examination of soil surveys and geological maps. The increased Mill Pond pH was found to be seasonal, concurrent with algal blooms, occurring mostly in the warmer months and was associated with increased phosphorus levels. The alkaline water may be due to dissolved CO₂ depletion caused by increased photosynthesis that in turn affects the pond's natural buffering capacity to stabilize the pH. Due to the limitations of the existing data collection, a more detailed study is needed to test this hypothesis.

ALLEN, CHENOA, Pi Delta, East Tennessee State University,
Persitstence time of eye mutation in a natural population of Drosophila.

Persistence time (the number of generations a mutation survives a population until selection and drift eliminate it) can be estimated as the ratio between the frequency of mutations segregating in the population at any given time and the mutation rate. We have estimated the frequency of visible eye phenotypes (eye color, eye size, and eye texture) in two natural populations of *Drosophila melanogaster* by screening 928 haploid genomes, finding 20 mutants (falling into 14 complementation groups). Seven of these 14 complementation groups could be identified to the gene, remaining seven complement all mutants available in stock culture collections. Using combined mutation rate at the same set of loci (from a 10-generation mutation accumulation experiment) of 2×10^{-4} , we estimate the persistence time of visible eye phenotype mutations at approximately 100 generations. These estimates separately for autosomal and sex-linked genes were respectively, 138 and 24 generations. These estimates support the idea that selection against recessive phenotypes in nature is very strong.

CALIX, JUAN J. Eta Lambda, Loyola University New Orleans.
Involvement of autophagic processes in anthrax lethal toxin mediated cell killing.

The bacterium *Bacillus anthracis* releases a lethal toxin (LT), which can kill mice *in vivo* and murine macrophages *in vitro*. There are different cell death pathways through which a cell can be killed, i.e. apoptotic, necrotic and/or autophagic. Each is identifiable by markers and a specific sequence of cellular events. Our previous studies of LT-treated murine macrophages have shown that preventing apoptotic pathways alone does not stop cell killing. Here we wanted to determine the role of autophagic processes following LT treatment of macrophages. We will analyze the sequence of morphological changes in LT-treated J774A.1 murine macrophages using fluorescence microscopy, and monitor the destruction of organelles and the cytoskeleton. Results demonstrate that LT-treated macrophages show signs of membrane perturbation 1.5 hours post LT treatment, as indicated by propidium iodide staining. In addition, the cytoskeleton depolymerizes three hours after LT treatment, as indicated by phalloidin staining of actin filaments. The late depolymerization of actin supports the involvement of autophagy in LT-induced cell death.

CARLSON, STEPHEN. Mu Theta, Belmont University. Aversive conditioning in cuttlefish (*Sepia officinalis* L.).

Two groups of cuttlefish (*Sepia officinalis* L.) were used to determine if this species is capable of aversive conditioning. For cuttlefish in the paired group, a model of a potential predatory fish was lowered into the tank, followed by net capture. Cuttlefish in the unpaired group received the same amount of exposure to the fish model and net capture, but with a 20 minute interval in between. Paired cuttlefish elicited anti-predatory behaviors more often than did cuttlefish in the unpaired group in response to the fish model. Two of the four behaviors observed in the paired group, color changing and eyespotting, showed an increase over the course of the experiment, while both inking and movement showed a decrease. While the paired cuttlefish exhibited these behaviors significantly more overall, the unpaired cuttlefish did not reliably exhibit any of the four observed behaviors. This study provides the first well-controlled demonstration of the capability of aversive conditioning in cuttlefish and extends our knowledge of the learning abilities of cephalopods.

CHAMBERS, MELISSA & DWAYNE WISE. Mu Sigma, Mississippi State University. A spindle matrix in meiocytes of the cricket, *Acheta domesticus*.

Three proteins, skeletor, chromator, and megator, have been found in *Drosophila* meiotic and somatic cells. These localize to the nuclear periphery at prophase and to the spindle at division. They form what has been termed a spindle matrix. The function of this matrix is not known, but it is suggested to play a role in nuclear organization and spindle assembly. Clearly, it is important to determine the presence or absence of this matrix in other species and to compare its form and function to that in *Drosophila*. In this paper, we report the results of our search for a spindle matrix in meiocytes of the common gray cricket, *Acheta domesticus*. In this species, the proteins localize to the spindle and to the nuclear periphery, in a manner similar to that seen in *Drosophila*.

****DAIGLE, MEGAN. Eta Lambda, Loyola University New Orleans. Chagas' Disease in a Louisiana Primate Colony.

Chagas' disease, caused by the parasite *Trypanosoma cruzi*, is a substantial cause of heart disease in Latin America. The disease is transmitted by Triatomine (kissing) bugs. While there are only five documented cases of human Chagas in the United States, the disease has been found in a significant number of raccoons, opossums, armadillos, wood rats, and squirrels in the southeastern United States. Studies have identified the presence of Chagas' disease in primate colonies in Georgia and Texas and recently autopsies have demonstrated Chagasic changes in primates at the Tulane National Primate Research Center in Covington, LA. In collaboration with the primate center we are testing if any of the ~ 5,000 primates housed in the center are infected with *T. cruzi*. Primate plasma was analyzed for the presence of antibodies to the parasite using a dipstick assay. Thirty-five primates (of >2,000 tested, 1.69%), show antibodies to *T. cruzi*. Presence of the parasite will be confirmed by culture and PCR. The primates in this center are bred for use in scientific research so

the effects of the Chagas parasite on infected primates could confuse the results of these other studies. This study is significant to future maintenance of the primate colony.

****FULLER, JENNIFER L. *Mu Omicron*, Columbus State University. Ecological Assessment of Lindsey Creek: Determining Overall Stream Health Using Macroinvertebrates as Biological Indicators.

Removal of inactive, low-head dams has become a valuable management tool in stream and river restoration. Interest has been taken in removing such a dam on Lindsey Creek, Columbus, GA. In response, an ecological study using benthic macroinvertebrates as described in the EPA's Rapid Bioassessment Protocols was initiated. The purpose was to assess stream conditions surrounding the dam and determine if dam removal would improve those conditions. After methodical examination of the macroinvertebrate assemblages compared to reference conditions for this ecoregion, it was determined that dam removal would not significantly enhance stream restoration efforts in this section of Lindsey Creek. Complete discretion was demonstrated on all but one metric analyzed with a box and whisker plot. However a third independent sample site on Lindsey Creek exhibited similar conditions to those at the dam sites. Nonpoint source pollution appears to be causing a greater impact than the dam. Removal of the dam would enhance niche availability, but diversity would unlikely increase. In order to best allocate limited resources, it is recommended that dam removal occur only in conjunction with or after significant measures to control urban runoff have been established and acted upon.

GENNUSSO, SONJA. Eta Mu, Southern University & Marcela Torrejon, Rakhi Gupta, Sigried Reinsch, Nasa-Ames Research Center. Insertional Mutagenesis in *Xenopus tropicalis* disrupts the KIAA0888 gene: Whole Mount In situ Analysis of Expression in Wild-Type Animals.

The main objective of this project is to identify genes expressed during vestibular, auditory, and neural development in *Xenopus tropicalis* through insertional mutagenesis. Insertional mutagenesis is a technique that inserts a transgene, a foreign piece of DNA, containing green florescent protein (GFP) randomly into the genome. This causes a mutation to the genome, hence, mutagenic². Florescent proteins serve as gene "trackers" because once their genetic code is inserted and actively transcribed into an animal's messenger RNA (mRNA), these proteins glow under florescent light and make their location easily visible. These mutations identify genes and allow one to determine the biological role of gene products. Specific goals of the Reinsch lab are to generate stable GFP expressing transgenic lines, clone and characterize genes expressed during ear and neural development, and study the mutant phenotype generated by the insertion. Ultimately, this research has possible implications for understanding gravitational affects on humans in space.

**HARRIS, BRETT N. *Mu Omicron*, Columbus State University. A follow-up survey of relocated adult gopher tortoises (*Gopherus polyphemus*) comparing two methods of trapping and diurnal activity at Disposal Area 36, George W. Andrews Lock and Dam in Early County, Georgia.

In 1995, several active gopher tortoise (*Gopherus polyphemus*) burrows were discovered in an area of CORPS land in Early County, Georgia that was slated for the deposition of disposal material. In order to avoid the destruction of these tortoises, 32 individuals were relocated to a more suitable habitat on adjacent property in 1995 and 1998. The current survey was undertaken to assess the long-term fidelity of these relocated tortoises and to determine the total population currently found at this site. While trapping these tortoises, I became interested in factors which might influence capture success, namely: the type of trap used (wire versus pitfall), the time of day during which tortoises were captured, and the relative capture rate of the two sexes. Although a total of 29 tortoises was captured, only three tortoises still remained at the site 6-9 years later. Preliminary analysis reveals that there are no significant differences or interactions among captured tortoises with respect to sex, time of capture, or type of trap employed.

*JOHNSON, MICHELLE L. Mu Chi, Midway College. Evaluating Handedness in Thoroughbred Weanlings.

The purpose of this study was to look for evidence of handedness in horses. Grazing stance and canter lead were used as indicators of handedness. Subjects were observed during turnout and grazing stances as well as canter lead departs were recorded. The handedness and strength of handedness were calculated for each subject. Hoof angle and injury history were also believed to influence handedness. Both front hoof angles were measured for each subject and an injury/surgery history was recorded. There were no significant differences in sample handedness while grazing or while cantering. The dominant leg suggested by hoof angle tended to support the leg suggested by grazing, and the leg suggested by injury history usually agreed with the canter lead of the subject. This supports the idea that the non-dominant hoof will have a larger angle, and also supports the idea that an injury will lead to the opposite leg becoming dominant. Finally, the results showed no significant difference in strength of handedness between colts and fillies.

MORGAN, ROBERT G. Pi Delta, East Tennessee State University. Using the White Gene to Establish a Phenotypic Control and Protocol for Molecular and Functional Analysis in *Sarcophaga crassipalpis*.

Sarcophaga crassipalpis is currently being studied due to the relative ease it takes to induce diapause. Diapause is an optional alternative life stage that is circadian gated. Diapause is controlled by genetic expression and is characterized by a temporary arrest of development at the pupal stage and a decrease in metabolic activity. In order to further understand the role of various genes in diapause, each must be studied from a molecular and functional perspective. To date, there has been no published papers giving a standard protocol for molecular or functional analysis in *S. crassipalpis*. We have selected to use the white gene that encodes for a product involved in the transport of pigment to the eye in order to both establish a standard protocol for analysis and have a phenotypic control. Thus far we have designed primers for the gene from known sequences of other related insect, obtained a gene fragment through RT-

PCR, and verified the fragment through sequencing. The gene fragment shows good homology with the sequences used to design the primers and when run through a Blast search. Functional analysis is being done through RNAi with the results currently pending.

ABSTRACTS DISTRICT I & II PAPER SESSION

CHO, INKI, ERIN DOUD, ANDREA MUNDEN, AND LEANN GRAVES.
Mu Epsilon, Troy University. Genome-wide expression effects of lead acetate and calcium acetate exposed *Saccharomyces cerevisiae*.

Microarray technology is a powerful technology which can monitor the genome-wide response of *S. cerevisiae* under differing conditions. Previous analysis of a yeast deletion library identified approximately fifty lead acetate responsive strains, and this analysis serves as a complementary, parallel approach. To study the genome-wide effect of lead acetate and calcium acetate on *Saccharomyces cerevisiae*, microarray technology was used with cultures grown in varying lead acetate concentrations (0 ppm to 4670 ppm). Results were analyzed and several genes were identified that displayed altered gene expression in the presence of varying lead acetate concentrations. Sixty-eight genes showed significant response to the lead; forty-eight were repressed by the lead (negatively responded), and twenty were induced by the lead (positively responded). Included in this pool were some previously identified genes and genes with known roles in metal binding. In addition, growth analysis of calcium acetate treated cells was completed and microarray analysis was initiated to assess calcium acetate response. These results will assist in identifying the mechanism of toxicity of heavy metals and/or divalent cations in yeast cells.

****DENGGER, BRADY C.** Sigma Psi, Florida Institute of Technology.
Comparison of the circatidal activity rhythms of adult fiddler crabs *Uca pugilator* from different tidal regimes.

Intertidal species, such as the fiddler crab *Uca pugilator*, have long served as models for studying endogenous tidal rhythms in marine organisms. Previous studies indicate that *U. pugilator* from areas with semi-diurnal tides exhibit a circatidal activity rhythm in which the active phase occurs at low tide. However, no studies have examined the activity patterns of crabs from areas with different tidal patterns. To test the hypothesis that crabs possess circatidal rhythms that match their local tidal regime, the locomotory behavior of male *U. pugilator* from beaches with diurnal and mixed tides were analyzed under constant conditions. Crab activity was monitored for one week using an infrared actograph system and the resulting time series were analyzed for periodicity using autocorrelation and maximum entropy spectral analysis. While both groups of crabs exhibited endogenous rhythms in activity, the periodicity in the time series differed significantly. Crabs from mixed tides possessed rhythms with dominant periodicities of ≈ 12.4 and 24h, while the activity of crabs from diurnal tides had a

single dominant period of ≈ 24 h. Given the proximity of the two collection sites, differences in the activity patterns of the two populations suggest that the circatidal behaviors of *U. pugilator* are phenotypically plastic.

FACHINI, JOSEPH M. Rho Sigma, University of West Georgia.
Aquaporin 0 and γ -Crystallin Interaction.

Aquaporin 0 (AQP0) is a transmembrane protein belonging to the family of water channels called aquaporins which is expressed exclusively in the eye lens fiber cells. Recently we showed that AQP0 undergoes structural alterations during thermal stress resulting in protein aggregation. The aim of this study is to understand the molecular interaction between AQP0 and γ -crystallin during thermal stress. Calf lens homogenates consisting of membranes containing AQP0 and cytosolic crystallins (α , β , and γ -crystallins) were incubated at different temperatures for 24 hours. The membranes were then washed and solubilized in octyl glucoside. Proteins purified by immunoaffinity were characterized by SDS-PAGE and western blots using antibodies against crystallins. The results showed that among the crystallins, only γ -crystallin was associated with AQP0 during thermal stress. Furthermore, there was an increase in the AQP0- γ -crystallin binding with the increased degree of thermal stress. These studies suggest that γ -crystallin specifically binds to AQP0 when the latter is undergoing thermal stress by its chaperone-like activity and prevents AQP0 from aggregation.

****GERHARDT, DAWN. Sigma Psi, Florida Institute of Technology.
Neural correlates of strike behavior in pit vipers: relative importance of vision and infrared imaging.

Boid and crotaline snakes possess two distinct imaging sensory systems- vision and a pit organ-based infrared imaging system- that allow infrared-imaging snakes to make accurate and precise strikes against prey and potential predators. Based upon previous research, vision may be more useful than infrared imaging to boid snakes. However, crotaline snakes (pitvipers) possess a much more elaborate and sensitive infrared system than boid snakes, and it has been suggested that IR systems evolved independently in boid and crotaline snakes; therefore, pitvipers may rely more heavily on infrared than on visual information. I tested this hypothesis using a carefully designed experimental protocol to investigate the sensory basis of targeting behavior in copperheads (*Agkistrodon contortrix*). Snakes were tested for behavioral responsiveness under different conditions of visual and/or thermal contrast between artificial targets and background. Preliminary results indicate that crotaline snakes' targeting preference is biased toward the infrared system. These results support the conclusion that infrared imaging evolved independently in boid and crotaline snakes, and suggest that infrared imaging has surpassed vision in functional importance in pit vipers. This work provides new information about biology of the imaging sensory systems and may ultimately help in developing novel artificial infrared sensing devices.

*GIBSON, COURTNEY B. Mu Omicron, Columbus State University. Effect of varied administration of Amfonelic Acid, a Ritalin-like stimulant, on growth rate and activity.

Attention Deficit Hyperactivity Disorder (ADHD) is the most common behavior disorder diagnosed in children and teens, today (WebMD, 2004). It was recently found that ADHD drugs are up 37% over the past five years and in the study year alone, more than 20.5 million prescriptions were written (Thomas, 2001). This research is focusing primarily on Methylphenidate Hydrochloride or Ritalin. The DEA offers the following description of the drug, "Methylphenidate is a central nervous system (CNS) stimulant and shares many of the pharmacological effects of amphetamine, methamphetamine, and cocaine. While being treated for ADHD symptoms, Ritalin is known for causing side effects including weight loss, decrease or loss of appetite, a temporary loss in bone growth, and more (White et al, 2003). A recent study showed that while the side effects listed above were noticed in the experimental rat group, upon conclusion of the treatment, the rats experienced a growth rebound that returned them to normalcy. Therefore, the objective of this study is to measure the amount and length of drug holidays necessary for the appropriate increase in weight and height of a child throughout his or her stimulant treatment program.

HEWITT, ELIZABETH. Tau Eta. Catawba College. Di-2-ethylhexyl phthalate (DEHP) causes abnormalities in the external genitalia of *Drosophila melanogaster*.

Di-2-ethylhexyl phthalate (DEHP) has a dose dependent toxicity in male rats and mice. DEHP results in abnormalities in rodent body weights, testis weights, epididymis weights and prostate weights. DEHP also penetrates the eggs and larvae of *Drosophila melanogaster* resulting in developmental abnormalities. In my study, the effects of different concentrations of DEHP on the development of the external genitalia of *Drosophila* males and females have been examined by scanning electron microscopy. I found that increasing the concentration of DEHP causes abnormalities of the external genitalia. At concentrations of 0% and 0.05% DEHP, there were no abnormalities of the external genitalia observed. At 0.5% DEHP, 30% of the male flies had disfiguring of the genital arch and anal plates and 0% of the female flies had abnormalities. Studying the effects of DEHP on *Drosophila* may be important to develop a model system to test DEHP toxicity.

HUBBARD, K. ELAINE. Psi Nu, Furman University. The effect of gefitinib (ZD1839) on SN-38 accumulation in cells over-expressing the MRP4 transporter.

Multi-drug resistance is an obstacle often encountered during antineoplastic therapy. A common way for this resistance to occur is through active drug efflux. ATP-binding cassette (ABC) transport proteins can mediate efflux of various anticancer drugs such as camptothecin analog, irinotecan (CPT-11), and its active metabolite, SN-38. However, previous studies have shown that epidermal growth factor (EGFR) tyrosine kinase inhibitors can be used to counteract this action by modulating ABC transport protein function. MRP4 is an ABC transport

protein that is responsible for preventing drugs from entering the brain. In this study, it was hypothesized that SN-38 was a substrate for MRP4 and that EGFR tyrosine kinase inhibitor, gefitinib (ZD1839), could modulate MRP4 function, thus increasing accumulation of SN-38 in MRP4 over-expressing cell lines. First, a high performance liquid chromatography method was developed to detect the presence of CPT-11 and SN-38 lactone and carboxylate in cell lysate. Drug accumulation studies showed that SN-38 is a substrate for MRP4 as evidenced by decreased SN-38 accumulation in MRP4 over-expressing cell lines. Furthermore, drug accumulation studies showed that gefitinib modulates MRP4 function, thus increasing SN-38 accumulation. Thus, gefitinib can be administered with SN-38 in order to optimize cancer chemotherapy with this drug.

MOSER, BERNICE AND RAYBURN, JAMES, Mu Phi, Jacksonville State University. Evaluation of the developmental toxicity of pseudoephedrine-Caffeine Interaction Using FETAX.

Both pseudoephedrine and caffeine are central nervous system stimulants and are found in many over-the-counter drugs including decongestants and weight loss chemicals. There has been much discussion about potential interactions. Frog Embryo Teratogenesis Assay-Xenopus (FETAX) was used to determine the developmental toxicity of pseudoephedrine and caffeine mixtures and to determine if synergism or antagonism occurs between the two. FETAX is a 96-hour developmental toxicity assay that screens for direct acting teratogens. Both have both been evaluated for developmental toxicity in FETAX but not as mixtures. The 96-hr LC50, 96-hr EC50, MCIG, and TI were determined for pseudoephedrine and caffeine in various mixtures. We tested five binary mixtures of the two chemicals. The mixtures were based on the toxic units of each chemical; where one toxic unit was equal to the 96-hr LC50. The toxic unit mixtures tested was pseudoephedrine to caffeine at toxic unit ratios of 0:1, 1:0, 3:1, 1:1, and 1:3. The 0:1 and 1:0 test the individual chemicals by themselves. Toxic units were plotted on an isobole graph to determine if synergism, concentration response or antagonism occurred. The response was found to be additive rather than synergistic.

VANG, HOUA AND LEONARD SUTTON. Tau Gamma, East Carolina University. Caco-2 as a model for epithelial transport.

IgG is a type of glycoprotein molecule that is produced by plasma cells in the response to an immunogen. They function as antibodies that can enter body tissues in search of specific antigens to destroy. IgG, also known as Immunoglobulin G, is present through the blood and plays an important part in our immune system. The aim of this study was to use epithelial Caco-2 cells, colonic Adenocarcinoma 2, as a model for IgG transport. The purpose was to determine whether IgG proteins can pass from the apical to the basolateral side in a designated period of incubation. The Caco-2 cells were prepared and grown in T-75 flask and then transferred to six Trans-well plates for confluence. Once confluence occurred, IgG labeled solution was placed on the apical side of the confluent Caco-2 cells. With different incubation periods, both the apical and the

basolateral media were extracted separately and tested employing a fluorescent probe. This test generated results demonstrating that the IgG proteins can pass through the intestinal epithelial cell.

*****WILHELM, ASHLEY.** Tau Eta, Catawba College. Social dominance and heat shock proteins: Are they related?

Social relationships among birds have far-reaching implications. They can determine access to food, mates, and the best breeding sites. The purpose of this study was to determine if social interactions affect a physiological response, the production of heat shock proteins (HSPs). A group of six Carolina chickadees was studied under field conditions in order to determine dominance. Birds were observed at a seed-baited feeder and the outcomes of dominance interactions were recorded. From these data, a dominance hierarchy was constructed. In addition, one blood sample was taken from each individual. Proteins were separated using SDS-PAGE and transferred to membranes. Membranes were tested with primary and secondary antibodies in order to determine HSP 70 levels. Results indicated that there is not a significant relationship between dominance rank and levels of HSP 70. (This project was supported by research grants from the North Carolina Academy of Science and the Beta Beta Beta Research Scholarship Foundation Fund).

WINKLER, BRANDEE L, PRISCILLA J BRYAN & LEONARD SUTTON. Tau Gamma East Carolina University. Growth rates and passage through Caco-2 intestinal cells.

Intestinal epithelial cells line certain tracts of the body and serve as a membrane allowing passage of certain molecules such as proteins. The cells are tightly packed together and they function as a barrier protecting against mechanical injury, invasive microorganisms and fluid loss. Scientific experiments were conducted to compare the passage of proteins through cellular membranes and growth rates in different concentrations of serum. This data was then used to evaluate different serum concentrations and measure protein passage through basolateral membrane of Colonic Adenocarcinoma 2 (Caco-2) cells. The Caco-2 cells were grown in flasks using New Born Calf Serum (NCS) of various concentrations to test and compare growth rates with other serums. Cells were also grown in transwell plates, which allowed for the creation of an apical and basolateral membrane. Fluorescently-labeled proteins were used to determine passage rates. Two trials were conducted; the first employed a transwell in an incubator for five hours and the second was facilitated by diffusion using water and NCS utilizing an Ussing's Chamber. Protein passage through the epithelial cell was measured using fluorescence. The results indicated that a longer incubation time was needed for protein passage, and higher concentrations of NCS produced increased growth rates.

**ABSTRACTS
DISTRICT I
POSTER SESSION**

BOUGES, SHENIKQUA, ESCOBAR, G.P., GOSHORN, D., HAPKE, E., HENDRICK, J., SAMPLE, J.A., MCLEAN, J.E., SWETERLITSCH, S.E., WEBB, C.S., ZILE, M.R., SPINALE, F.G. & LINDSEY, M. L. Psi, University of South Carolina & Winthrop University. Myocardial profiles of matrix metalloproteinases and tissue inhibitors of matrix metalloproteinases in chronic pressure overload.

Hypertension creates pressure overload on the left ventricle (LV) and can lead to major cardiovascular hypertrophy and congestive heart failure. Matrix metalloproteinases (MMPs) are ECM-degrading enzymes which remodel LV, thus altering LV function. A chronic pressure overload model that involves transverse aortic constriction (TAC) in mice was used to determine if alterations in specific MMPs and tissue inhibitors of metalloproteinases (TIMPs) occur in response to chronic TAC. We measured levels of MMPs 3, 7, 8, 9, 12, 13, and 14 and TIMPs 1- 4 in the LV of young unoperated mice (n=24), middle-aged unoperated mice (MA; n=18), and MA mice that had undergone TAC 12 months previously (MA+TAC). LV mass increased in MA (106 ± 4 mg; $p=0.02$) and MA+TAC (116 ± 11 mg; $p=0.01$) groups, compared with young controls (89 ± 4 mg). LV samples were homogenized subjected to immunoblotting. In the soluble fraction, MMP-3 decreased and MMP-7 and TIMP-1 increased in TAC, compared to both unoperated groups. Soluble MMP-12 decreased in MA+TAC, compared to MA. In the insoluble fraction, TIMP-4 decreased in MA+TAC, compared with MA. Overall, soluble MMP and TIMP levels were increased and insoluble TIMP levels were decreased. These results identify MMPs and TIMPs that are altered by chronic pressure overload.

****CARTER, BEN AND MARYDEE VAILE. Beta Eta, Florida Southern College. Determination of the effectiveness of storm water treatment wetlands as natural filtering habitats.

For at least the past fifteen years there has been a surge of fecal coliform levels in Lake Hollingsworth in Lakeland, FL. Almost every year the city closes the lake due to these high coliform counts. Florida Southern College has been conducting longitudinal studies on the lake to try to determine the cause. It has been thought by many experts that the problem lies in the storm water runoff in conjunction with the Great White Pelicans (*Pelecanus onocrotalus*), which migrate to Lakeland, FL each year. Recently, Florida Southern College, along with the City of Lakeland, built a storm water treatment wetland known as Southern Landing. In part of an ongoing study, we determined the effectiveness of Southern Landing as a natural filtering habitat. This involves testing the: temperature, dissolved oxygen, pH, Secchi disk depth, nitrates, nitrites, phosphorous, chlorophyll a, total suspended solids (TSS) and turbidity, as well as fecal coliform counts and analysis. Hopefully, our study will help determine the effectiveness of storm water treatment wetlands similar to this and can provide information for people in the future who are considering using storm water wetlands in other environmental situations similar to this.

CLARKE, ANDREA N. AND T. NICOLE KNOX. Sigma Gamma, Erskine College. Protein-Protein Interactions Involved in Cytoskeletal Rearrangements and Adhesion in *Dictyostelium* Development.

When stressed, (i.e. starved) *Dictyostelium discoideum* aggregate together and exhibit an alteration in actin cytoskeleton arrangement. The goal of this project was to determine what role the G-protein Sas1 plays in adhesion and cytoskeletal rearrangement. When large amounts of Sas1 are present, a decrease in adhesion strength and an increase in projection formation are noted. It has been proposed that interaction of active Sas1 (Sas1-GTP) with the germinal center kinase (GCK) allows for phosphorylation of severin, a protein that instigates actin rearrangement. The yeast dihybrid system is being used to determine if active Sas1 interacts with GCK. Three different *sas1* alleles were introduced into the dihybrid plasmids: the wildtype allele, a constitutively active allele, and a dominantly negative allele. The three *sas1* alleles were subcloned into pGADT7 and pGBKT7 vectors for transformation into the yeast dihybrid system. The GCK gene will also be inserted into the yeast vectors and then transformed into the dihybrid strains. Yeast strains harboring each *sas1* plasmid will be mated with a GCK containing yeast strain. Interaction between Sas1 and GCK will be determined by plating the resulting diploids on the appropriate dropout medium. Positive interactions will be confirmed by enzyme assays.

ELLMERS, TIM, TOURKINA, S., SILVER, R. AND E., HOFFMAN. Psi, Medical University of South Carolina & Winthrop University. Regulation of alpha-smooth muscle actin and collagen by caveolin-1 in human lung fibroblasts.

Caveolin-1, the principal protein in caveolae, the flask-shaped membrane invaginations, has been found to regulate certain aspects of scleroderma lung disease. Our studies revealed several strong connections between caveolin-1 and scleroderma. Scleroderma lung fibroblasts (SLF) contain lower levels of caveolin-1 than normal lung fibroblasts (NLF). Similarly, the fibrotic lungs of bleomycin-treated mice contain less caveolin-1 than normal saline-treated mouse lungs. Using siRNA to decrease caveolin-1 expression in NLF causes a significant increase in collagen and alpha-smooth muscle actin (a-SMA) expression, but has no effect in SLF. Immunocytochemistry confirmed that while in NLF caveolin-1 exhibited intense perinuclear staining, in SLF only modestly peripheral staining was observed with little or no staining in the vicinity of the nucleus. Immunostaining also revealed that scleroderma cells, in which a-SMA was organized in stress fibers, contained even lower levels of caveolin-1 regulates collagen deposition and a-SMA expression in NLF and SLF. In conclusion, we discovered that caveolin-1 plays an important role in the regulation of a-SMA and collagen in NLF. Based on our data we speculate that caveolin-1 upregulation will inhibit lung fibrosis by inhibiting the differentiation of NLF to myofibroblasts.

FRICK, AMBER. Sigma Phi, Guilford College. Structure-function studies of zebrafish (*Danio rerio*) DNA polymerase λ .

DNA polymerase lambda (Pol λ) is involved in DNA repair. Pol λ is believed to participate in base excision repair (BER) and non-homologous end joining (NHEJ). Recent structural characterization shows that the catalytic domain of human Pol λ consists of 8 kDa, thumb, palm, and fingers subdomains. Pol λ is predicted to contain two additional N-terminal domains, a BRCT and a serine-proline rich domain that have not been characterized. Zebrafish DNA polymerase λ (Zf Pol λ), a homologue of human Pol λ with 67.3 % amino acid similarity, may be a useful model for determining the functional and structural characteristics of human Pol λ . The coding sequence of Zf Pol λ , a 39 kDa domain and the BRCT domain were cloned into the T-7 based *E. coli* expression vector pET21-a. Proteins from these constructs were expressed in BL21(DE3)RIL *E. coli* cells through induction with IPTG. Full length Zf Pol λ was purified, and the activity was measured using a radioactive assay. Results of this study show that Zf Pol λ contains an intrinsic DNA polymerase activity that is stimulated by the presence of a DNA gap, suggesting a possible role in gap-filling repair.

FULTON, BARRY A. Rho Pi, Brevard College. Evaluating the feasibility of trout introduction to Lake Sheila.

Lake Sheila is an oligotrophic lake in western North Carolina at an elevation of approximately 2,350 ft. Lake owners are interested in introducing native brook trout (*Salvelinus fontinalis*) and rainbow trout (*Oncorhynchus mykiss*). Although trout are generally common in western NC mountain streams, they are less widespread in lakes, as lakes in western NC are manmade. Each trout species requires specific physicochemical conditions, including minimum levels of dissolved oxygen at depth and surface, temperature at depth and surface, turbidity, phosphate and nitrate levels, pH, and alkalinity. These parameters were measured in Lake Sheila, and the measured values were compared to standard conditions considered suitable for trout growth. In addition, macroinvertebrates were sampled from lake tributaries to test the quality of incoming water to the lake. Overall, the physicochemical properties of Lake Sheila fall within the range of conditions conducive to the growth and reproduction of trout, and the confluent tributaries were of sufficient water quality. Thus, the introduction of trout is considered feasible and is likely to be successful.

HARKLESS, SARAH B. Tau Tau, Queens University of Charlotte. Effectiveness of greater Charlotte area greenways on improving water quality.

Over the past several years Greenway Systems have been introduced to the greater Charlotte, North Carolina area. City and county officials hope the greenways will accomplish multiple tasks including: economic benefits, recreational opportunities, and water quality improvements. Greenways help reduce the effects of pollution and urban runoff into the local streams and rivers. The Greenway System projects usually reclaim or buy back the land around a river or stream and take measures to allow the area to return to its natural state creating a buffer zone between runoff pollution and the waters. Despite the fact

that many communities use such ecological arguments to justify greenway projects, there is little experimental evidence to back up these claims. We sampled and evaluated water collected above and in the greenways to determine the effectiveness of the Greenway System project. Based on preliminary fecal coliform testing and water chemistry the effectiveness of the greenways cannot be guaranteed. However, the Greenway System is not complete, and this study may only be the first phase of a long-term evaluation of Greenway System effectiveness in the Charlotte area.

****JORDAN, REBEKAH F.** Beta Alpha, Salem College, District II, Role of mTOR in the phosphorylation of normal stromal uterine cells when dosed with insulin.

Uterine cancer occurs when cells in the uterus undergo proliferation unchecked by mechanisms in the cell. The phosphorylation chain involved in cell division includes the protein mTOR. Through observation of the behavior of the mTOR protein and its phosphorylation during cell signaling, a better understanding of cell signaling can be obtained. With this knowledge, it could be easier to determine the best way to reinforce the check system of cell signaling and prevent uncontrolled division. Cells were treated with insulin at two concentrations and time points, and were probed for total mTOR and phosphorylated mTOR signals using Western blotting techniques. It has been concluded that mTOR responds to insulin by increasing phosphorylation. Preliminary tests suggest that "turning off" mTOR would stop the phosphorylation process and hinder cell division.

LEDBETTER, KRISTEN & KRISTI WESTOVER. Psi, Winthrop University. Phylogeny of the Mononegavirales and evolutionary divergence of the structural glycoprotein gene.

Emerging infectious diseases of economically important animals such as fish and poultry, as well as lethal infections in humans, are caused by members of the order *Mononegavirales*. Phylogenetic relationships among members of the negative-sense RNA viral order of *Mononegavirales* were examined using sequences of the structural glycoprotein. In addition to elucidating evolutionary relationships within the order, the phylogeny will serve as a tool for examination of epitope regions of the glycoprotein by identifying independent viruses for comparison. Identifying the rates and locations of particular types of substitutions within epitope regions is paramount for understanding how to manage and treat potentially dangerous viruses. A neighbor-joining tree was generated from a multiple amino acid alignment using uncorrected p-distance. The phylogeny identified clusters corresponding to the known families within the order: *Rhabdoviridae*, *Paramyxoviridae*, *Filoviridae*, and *Bornaviridae*. A cluster including the genus *Ebolavirus* was found to be basal. Within the *Rhabdoviridae*, we investigated infectious hematopoietic necrosis virus (IHNV) and viral hemorrhagic septicemia virus (VHSV) whose placements in the family remain controversial, as well as the unclassified Sigma virus and a trout rhabdovirus isolate known as *Rhabdovirus* 903/87. Contrary to previous reports in which VHSV is linked with the rest of the *Lyssavirus* group, our analysis showed a well-supported clade comprised of VHSV and IHNV. In addition, we found members

of the *Vesiculovirus* group, including the trout rhabdovirus 903/87, to be more closely related to the *Lyssavirus* group than to the VHSV/IHNV clade. The unclassified Sigma virus was found to be associated with members of the *Ephemerovirus* group.

LEÓN, RACHEL. Sigma Phi, Guilford College. Effects of GABA agonist muscimol and NMDA on developing spinal motoneurons during the period of programmed cell death in the chick embryo.

Programmed cell death is the species and tissue dependent death of up to fifty percent or more cells in a population. It is a naturally occurring process that plays an important role in the development of both vertebrate and invertebrate nervous systems. This study focuses on the programmed cell death of motoneurons of the lateral motor column in the chick embryo. These neurons innervate the hind limbs and by the end of incubation typically show a fifty percent population decrease from the original pool of differentiated cells. Previous studies have shown that inhibiting embryonic motility can lessen the extent of programmed cell death of motoneurons. In this study, the effects of muscimol and NMDA on motoneuron programmed cell death were examined. Muscimol is an agonist of the GABA_A receptor while NMDA acts on the NMDA type glutamate receptor. The chemicals were administered alone and together and in all study groups caused a decrease in embryonic motility. Yet muscimol exclusively was able to save motoneurons from programmed cell death. NMDA enhanced the programmed cell death of motoneurons, and the combined treatment of NMDA and muscimol lead to highly variable motoneuron fate.

***LIPPINCOTT, LAUREN. Sigma Phi, Guilford College. Molecular Phylogenetic Analysis of *Azomonas agilis*.

Molecular phylogenetic analysis is the process of determining evolutionary relationships, usually using the sequences of an organism's 16S rRNA. Since *Azomonas agilis* has not been extensively studied, the goal is to ascertain its place in the *Azotobacteraceae* family tree. Along with *Az. agilis*, phylogenetic analysis was performed with *Azomonas zetouvii* and *Azotobacter insignis*, two other similar organisms about which little is known. Phylogenetic examination of the 16S rRNA and the RNase P RNA gene sequences determined that the culture we had was not *Az. agilis*, but *Arthrobacter oxydans*. In addition, these trees showed that *Az. zetouvii* branched among the *Pseudomonads* as expected, but *A. insignis* unexpectedly branched with *E. coli*. With a new culture, the ITS region of *Az. agilis* has been found to contain no tRNA genes, which is unusual. Characterization of the 16S rRNA and RNase P RNA genes of *Az. agilis* are currently being performed.

MILLS, ELIZABETH. Psi Nu, Furman University. Electroporation of Madin-Darby canine kidney cells: introducing small interfering RNA to inhibit the influenza A virus.

Small interfering RNA (siRNA) have been found to successfully silence the influenza virus in Madin-Darby Canine Kidney (MDCK) cells by interfering with the mRNA responsible for producing proteins that aid in virus replication.

Techniques that will allow siRNA to be introduced into MDCK cells, however, are yet to be determined because MDCK cells are resistant to transfection by methods such as liposome fusion. Specific proteins such as Canine Ras-related (Rab-9) proteins have been found to enhance the influenza virus infection. This experiment used the method of electroporation to allow siRNA to suppress the genetic expression of Rab-9 mRNA. After electroporation, either a beta-galactosidase (b-gal) stain was performed or the cells were infected with A/PR/8/34 influenza A virus. The virus was titrated and an agglutination assay was performed with avian red blood cells. This agglutination assay showed that the siRNA directed against Rab-9 mRNA inhibited the MDCK cells sufficiently when a 1:5 infection was used. Overall, electroporation is a valid technique for incorporating siRNA into cells. Perhaps, since some infection conditions did not show significant results, a different cell line is needed which will stabilize the siRNA or a vector is needed to mediate entry of siRNA into MDCK cells.

*MOREAU, VANESSA. Sigma Psi, Florida Institute of Technology.
Evaluation of catecholamine-induced changes by adrenochrome and adrenolutin in gap junctions of vascular cells.

Catecholamines are sympathomimetic amines that function as hormones or neurotransmitters. Epinephrine (adrenalin) is a naturally occurring catecholamine associated with the fight or flight reaction and is a powerful vasoactive agent. Excess catecholamine induces myocardial pathology in the form of endocardial lesions and myocardial stunning. Elevated catecholamine levels result from stress, exposure to organophosphates, bioactive agents etc. Adrenaline rapidly auto-oxidizes to adrenochrome and adrenolutin by enzymatic or non-enzymatic catalysis. Adrenochrome itself has been shown to induce cardiotoxicity in a dose and time-dependent manner. Given that adrenalin oxidizes to adrenochrome and then rapidly rearranges to adrenolutin in plasma, we hypothesize that adrenolutin may induce cardiac tissue injury. Normal heart function is dependent on special ion channels, the gap junction (GJ) channels that provide syncytial cardiac and vascular function. Connexin 43 is the predominant gap junction protein in the blood vessels and heart. Several approaches are being used to investigate effect on GJ's and potential role in injury using rat aortic A7r5 cells in culture with timed exposures to adrenaline, adrenochrome and adrenolutin followed by analysis of GJ function and expression. A combination of techniques using immunoblotting, microinjection with tracer dyes, dye scrapeloading techniques and immunohistochemistry will be presented.

MYERS, SARAH E., AUSTIN CAPE, KAVITA BHAT, JOHNATHAN TURNER, AND SUSANNA GREER. Eta Psi, Georgia State University.
The Effect of Proteasome Inhibition on MHC Class II Transcription.

The MHC class II transactivator CIITA is responsible for initiating immune responses by activating expression of the MHC class II molecule. CIITA is not a DNA-binding protein, but functions by interacting with and stabilizing the enhanceosome formed by the required MHC class II transcription factors to initiate transcription. As previously demonstrated by the Greer Lab, the monoubiquitination of CIITA enhances its transactivation function by recruiting CIITA to the MHC class II enhanceosome, resulting in increased expression of

MHC class II mRNA. To further determine the role of the ubiquitin proteasome system in regulating CIITA function, we investigated the role of inhibition of the proteasome in regulating CIITA mediated MHC class II activity. We also investigated the association of components of the 26S proteasome with CIITA and the enhanceosome. Our studies demonstrate that the proteasome plays a critical role in regulating CIITA mediated transcription. Research supported by a Career Transition Grant from the NMSS (S.F.G.)

PERKINS, AMY E. Sigma Psi, Florida Institute of Technology.
Determination of nursery habitats used by *Centropomus undecimalis* (snook) as determined by otolith microchemistry.

Fish otoliths (ear bones) may incorporate elemental signatures that reflect the water chemistry of the environment utilized during different life stages of the fish. Microchemistry patterns of otoliths have been used in several studies to determine the linkages among populations of fish from varying nursery and reef habitats. I am testing the hypothesis that snook from geographically distinct nursery habitats incorporate different elemental signatures in their otoliths. These snook support one of the most valuable recreational fisheries in Florida, and determination of their most important nursery habitats will help focus conservation efforts to maintain the population. Otoliths were collected from juvenile snook in two geographically distinct locations in Florida: Port Charlotte Harbor (southwest Florida) and Indian River Lagoon (east central Florida). Otoliths were removed using non-metal instruments to reduce trace metal residues and will be analyzed in a solution based inductively coupled plasma mass spectrophotometer. Results are pending; if the basic hypothesis is accepted, fishery biologists will have a powerful tool to identify the nursery habitats that produce individual fish.

PONTIOUS, ADRIA. Tau Iota, University of North Carolina Pembroke,
 TERRENCE LEWIS, CLAIRE BARBIER, AND DAVID KAUFMAN,
 Pathology and Lab Medicine, University of North Carolina at Chapel Hill,
 National Institutes of Environmental Health Sciences Grant 5 T32
 ES07296-10. Estrogen Receptor Phosphorylation as an Indication of
 Epithelial Mesenchymal Transition in Endometrial Cancer.

Normal endometrial epithelial cells require paracrine signaling by underlying stromal cells to regulate proliferative responses to hormones such as estrogen. In endometrial cancer, epithelial cells are able to respond to these signals without stromal cell mediation. It is believed that cancerous cells become independent by adopting stromal or mesenchymal cell type regulation that can respond directly to hormones. This bypass mechanism is believed to involve cross-talk between mitogenic pathways and the estrogen receptor (ER), because EGF is known to activate estrogen response mechanisms in breast adenocarcinoma. The objective of this project is to test whether epithelial to mesenchymal transition occurs by measuring activation of MAPK and estrogen receptor pathways, and by comparing cross-talk between these pathways in endometrial cancer versus breast cancer cells. Three different cell lines, normal endometrial stromal, Ishikawa endometrial adenocarcinoma, and MCF7 breast adenocarcinoma were treated with estrogen and EGF for various time points. Phosphorylated MAPK,

and three phosphorylated forms of the estrogen receptor were quantitated using Immunoblot techniques. The results have revealed that the ER in the adenocarcinoma cell line is activated very similar to the activation trends seen in the stromal cells, but show a 2-4 fold increased response. Further investigations are in progress to examine the occurrence of epithelial mesenchymal transition in endometrial adenocarcinoma.

WYNNE, SUSAN I. Rho Pi, Brevard College. Patterns and correlations of congenitally missing teeth and oral clefts.

Understanding the genetic aspects of a condition offers explanations of its origin and causes. The genetics of congenitally missing teeth, teeth that have never formed, are currently being researched. Through DNA analysis of several affected families, mutations of two specific genes, PAX9 and MSX1, have been implicated in contributing to this condition. Many of these cases include at least one family member with an oral cleft, thought to be linked to mutations of the MSX1 gene in addition to maternal smoking. In this study, I compare a new case family affected with both conditions to these documented cases. In addition to constructing a detailed pedigree for the conditions in this family, I arranged for family members to provide blood samples that were sent to researchers at the University of Texas at Houston Dental Branch who are now conducting PCR analysis and DNA sequencing. I will discuss the phenotypes within this case family in comparison to previous cases and will discuss hypotheses concerning which genetic events regarding PAX9 and MSX1 (gene deletion, frameshift mutation, or no mutation) may be responsible for individual phenotypes in the case family and concerning whether maternal smoking is a causal factor in the phenotypes exhibited.

ABSTRACTS DISTRICT II POSTER SESSION

*CHO, YOON. Mu Epsilon, Troy University. Northern analysis of transcription from a transcription termination reporter construct.

The molecular biological understanding of the steps that occur during the termination of transcription in eukaryotes is not well understood. Being able to regulate the amount or the level of transcription termination that occurs in the cell is essential in assays of termination. Previous enzyme assays showed a wild type yeast strain (PL801, no mutation) and a mutant yeast strains (PL802, mutation) transformed with a reporter construct displayed increasing levels of enzyme activity as the transcription inducing agent (galactose) levels increased, indicating that the level of transcription increased and the level of effective transcription termination seemed to decrease as the concentration of galactose increased. Northern Blot analysis, a method that allows detection and quantitation of mRNA levels, is being used to correlate the enzyme activity levels to the actual mRNA levels produced from the transcription termination reporter. These results are designed to confirm the usefulness of this reporter system in studying transcription termination under varying transcription levels.

****DANNER, MARY E.** Mu Omicron, Columbus State University. Evaluation of the effects of estradiol and progesterone on the proliferation of premenopausal and postmenopausal breast cancer epithelium.

Because a link between breast cancer and hormones has been well established, the purpose of this study was to determine if there was a difference between premenopausal and post-menopausal breast cancer proliferation when cells were treated with estradiol and progesterone. These hormones exhibit their effects via receptors on the cell surface. Breast cancer cells were cultured and counted using procedures provided. It was found that estradiol greatly enhanced proliferation at low concentrations but was lethal at high concentrations. Progesterone treated cells showed a marked decrease in proliferation overall, but a drastic decline in growth at high concentrations. Statistical analysis revealed that the amount of cell proliferation was affected by hormonal treatment level and age of cells for estradiol. Growth of breast cancer cells treated with progesterone was only affected by treatment level and not by the age of the cells. These results indicate a possible correlation between number of cell receptors present before and after menopause and cancer progression.

GIBB, MARISA. Eta Lambda, Loyola University New Orleans. Effects of habitat complexity on predator foraging efficiency.

Predation is an important force in aquatic communities, with much research documenting the importance of large vertebrate predators on regulating the diversity and abundance of their smaller invertebrate prey. Continued coexistence of vertebrate predators and their aquatic prey is facilitated by the presence of aquatic vegetation that provides refuge for prey. Increasing vegetation density often results in increased prey survival because fish predators have increasing trouble detecting and capturing their prey. This view of aquatic communities is somewhat simplified in that the roles of predators and prey can be reversed when their relative size relationships are reversed – that is, large invertebrate predators may play a role in regulating the abundance and diversity of small-sized fishes. Furthermore, many invertebrate predators are ambush predators that may benefit from increasing vegetation because they are provided with more cover and ambush sites. Wetlands provide an excellent system to examine predator role reversal because they are heavily vegetated and variable hydrologic conditions facilitate coexistence of a range of predator and prey types. I performed a laboratory experiment to determine whether a suite of common wetland invertebrate predators would prey upon the locally abundant least killifish (*Heterandria formosa*) and whether increasing plant density would facilitate prey capture rates. Creeping water bugs (Naucoridae), giant water bugs (Belostomatidae), and crayfish fed upon least killifish to some degree, whereas dragonfly larvae (Aeschnidae) were voracious predators of least killifish. Density of simulated *Ludwigia* plants had little effect on foraging rate. Although there was little evidence for plant facilitation of invertebrate foraging success, it appears that increasing plant density does not adversely affect these predators as much as it does fish predators.

HERTLEIN, EMILY. Mu Epsilon, Troy University. Overexpression of proteins in lead acetate responsive deletion strains of *Saccharomyces cerevisiae*.

In previous analysis, lead acetate responsive (LAR) strains were identified that display both hyposensitivity (tolerance) and hypersensitivity (non-tolerance) to lead acetate from a collection of yeast knockout strains. In this study, the lead responsive strains were evaluated to determine if lead response is modulated by reintroduction of the deleted genes, utilizing the Yeast ORF Collection, available through Open Biosystems. This collection contains individual plasmid constructs that harbor a single yeast open reading frame under the control of an inducible galactose promoter (Gal 1). Therefore, the effects of overexpression of the deleted gene product can be assessed in the individual deletion strains. The deletion strains analyzed include two lead hypersensitive strains ($\Delta Vma8$, $\Delta Cup5$) and two lead hyposensitive strains ($\Delta MPC54$, $\Delta YOR200W$). Analysis of the results obtained will lead to a better understanding of the mechanism of lead toxicity in *Saccharomyces cerevisiae*. In future studies, the plasmids will be introduced into a wide variety of deletion strains to assess complementation and lead response.

ROSEL, GEORGANNA. Pi Delta, East Tennessee State University. Characterization of genes differentially regulated in *Sarcophaga crassipalpis* using microarray analysis.

Diapause is an inducible developmental state that allows many organisms to endure stressful environmental conditions, such as an impending winter. The flesh fly, *Sarcophaga crassipalpis*, enters the diapause state based on a response to extended night length. Many genes appear to be differentially regulated by the fly's entrance into diapause. Total RNA was isolated from *S. crassipalpis* and the cDNA probes were hybridized against a *Drosophila melanogaster* gene set in a heterologous microarray. The resulting values were normalized and candidate genes were selected based on the \log_2 values. The data suggests that there are approximately 350 up-regulated and 200 down-regulated genes. Bioinformatic analysis has been used to design primers for a number of the candidate genes. Using total RNA from diapausing and nondiapausing pupae and an oligo-dT primer, reverse transcription was performed. Candidate genes were amplified using PCR and then screened for the presence of cDNA using agarose gel electrophoresis. If the results were inconclusive, the process was repeated using gene-specific reverse primers in the reverse transcription. The verified genes can be cloned and sent for sequencing. This work will further efforts to verify the microarray data and can be used in the future sequencing of the *S. crassipalpis* genome.

SAMPSON, DANEEN. Beta Phi, The University of West Alabama. Influence of Fire on Tree Height and Vegetative Diversity.

Prescribed fires have been used throughout the years as a way to manage forests and wildlife areas. Burning can be an effective means of preparing sites for planting and controlling competing vegetation. Many plant species are adapted to regular low intensity fire for survival. One of these is Table Mountain

Pine (*Pinus pungens*), which, along with Eastern White Pine (*Pinus strobus*), Shortleaf Pine (*Pinus echinata*), and Virginia Pine (*Pinus virginiana*), has been planted in areas of Fishburn Forest that were burned by a controlled fire. In an attempt to determine the growth of these pines and richness of surrounding vegetation relative to the intensity of fire in areas they were planted, 96 plots were examined. Height of the individual pines of each species was measured, and the surrounding vegetation was identified while comparing the richness of species in each burn category. No significant difference was found in the heights of the pine trees relative to fire intensity, and species richness differed in two of the four categories of fire intensity examined. Although it seems that fire has no immediate effect on the growth of these pines, there may have been other factors contributing to the results that were not considered.

SCOTT, AMANDA. Mu Chi, Midway College. Prevalence of Intestinal Parasites in Canines of Anderson County Kentucky.

The purpose of this study was to determine whether the age, sex, home location and fixed or intact status influences a dog's susceptibility to intestinal parasite infestation. Five common parasites in dogs, Ascarids, Ancylostomatids, Cestodes, Coccidia, and Tricurids, were checked for by gravity fecal floatation. Samples were obtained from dogs entering The Animal Clinic in Anderson County Kentucky on Saturdays between September and November 2003. Results were recorded on individual data sheets documenting the area in which animal resides, the sex, age, and whether or not the animal was fixed. In this study 21 fecal samples were examined, 13 (62%) were negative for parasites. From the 8 positive samples 11 parasites were found. Puppies appeared to be more likely to be infected by intestinal parasites. An equal number of country and urban dogs were infected (4), however a greater percentage of the urban dogs were found to be positive (44%), compared to 33% in country dogs. Urban dogs have a smaller area and this may cause greater contact with feces, increasing their risk of exposure and infection.

WELLHAM, ASHLEY S. Mu Omicron, Columbus State University. The Effects of Sodium Bicarbonate Treatment on Blood Chemical Levels in Horses Before and After Exercise.

During moderate or strenuous exercise lactic acid is shown to build up in the blood. This is due to oxygen deprivation in the muscle cells forcing the cells to switch over to anaerobic processes of converting pyruvate into lactate in order to continue glycolysis. When insufficient levels of O₂ are present the cell must regenerate NAD⁺ by the means of fermentation. This end product of fermentation is lactic acid. Sodium Bicarbonate is thought to increase the blood buffering system enhancing lactate clearance of skeletal muscles. Ten Appaloosa horses were used in this experiment to determine if a Sodium Bicarbonate treatment would affect blood chemical levels before and after moderate exercise. The ten horses were exercised on two occasions. Occasion one was the base line for the study, and none of the horses received Sodium Bicarbonate. On occasion two all of the horses received a Sodium Bicarbonate treatment one hour before exercise. The statistical analyses show that Sodium Bicarbonate does not affect the blood chemical level of horses if given before exercise.

ZELLERS, REBECCA. Mu Chi, Midway College. The Prevalence of Feline Leukemia and Feline Immunodeficiency Virus In Free-Roaming Cats of Anderson County Kentucky In Comparison To The State and Regional Averages: A Pilot Study.

Currently, Feline Leukemia Virus (FeLv) and Feline Immunodeficiency Virus (FIV) are the two most common pathogenic retroviruses found in domestic cats. The purpose of this study was to find the prevalence of FeLv and FIV in free-roaming cats of Anderson County Kentucky in comparison to the state and regional averages. The sample size consisted of 139 cats total; 35 from Holly's Place and 104 from the Anderson County Humane Society. The prevalence of FeLv and FIV was determined by testing for Feline Leukemia antigen and Feline Immunodeficiency antibody using three drops of whole blood and an Idexx test kit manufactured by Idexx Laboratories, Inc. The results revealed that out of 139 free roaming cats tested, 3% of the cats were found to be positive for FIV and 1% were positive for FeLv.

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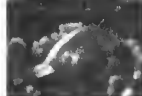
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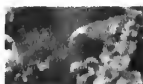


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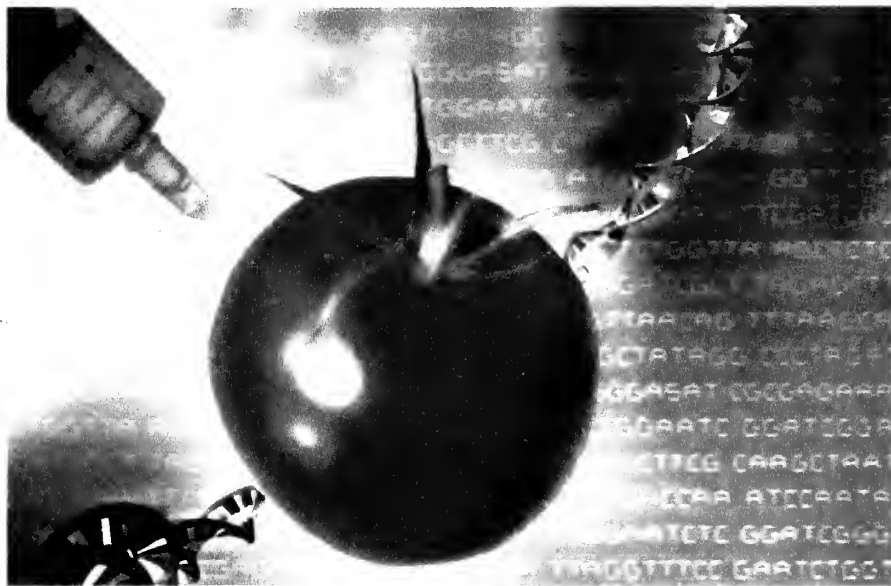
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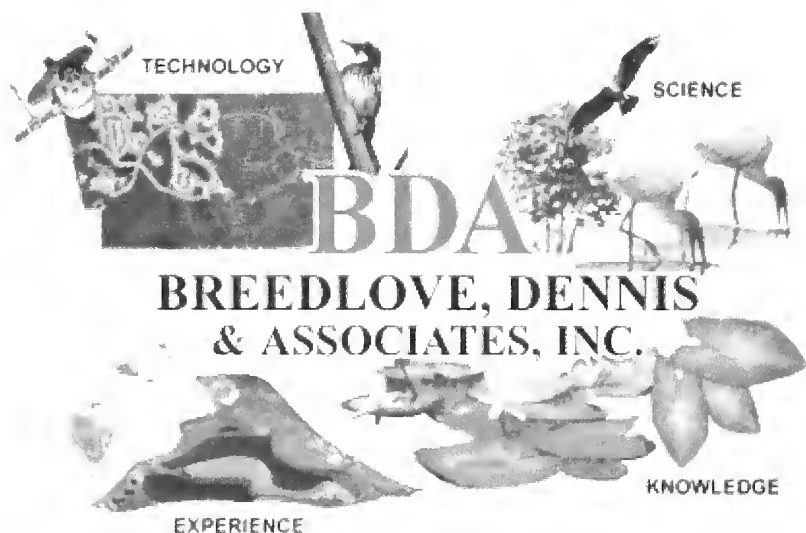
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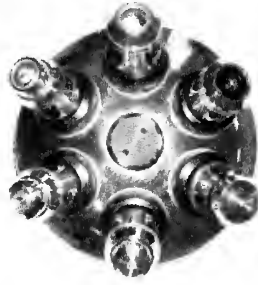
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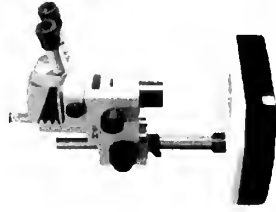


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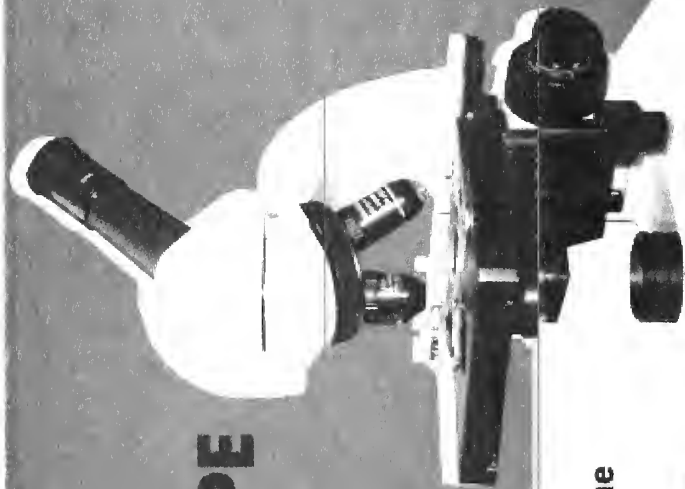
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SOUTHEASTERN BIOLOGY
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